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Rubber Situation Sanely Viewed

An article embodying a succinct summary of rubber planting history, a comprehensive survey of the crude rubber supply, and a careful analysis of an international commodity problem was contributed recently to *Foreign Affairs* by Harry N. Whitford, chief of the Crude Rubber Section, Rubber Division, United States Department of Commerce. The author stresses the fact that out of the $240,000,000 total world exports of rubber in 1923, the United States took over $185,000,000 worth, or 77 per cent; and of the total production 95 per cent came from plantations in Southeastern Asia and nearby islands.

Like many of his countrymen he has misgivings about the control by other nationals of the chief sources of planted rubber, although he finds comfort in the reflection that the sponsors of the Stevenson Act unwittingly did Americans a real service in rousing them from their sense of fancied security. When a foreign power undertook regulation of price and production of such an essential commodity, he says, American rubber buyers suddenly realized their possible plight, and their fear found expression in the measures taken by Congress to provide, if possible, for new sources of supply under American control.

Apart from being an economic blunder, the author regards the Stevenson Act as maladroit inasmuch as it not only stirred up American antagonism, but it also stimulated independents to unwonted planting activity, and it advertised to the world a potential over-supply of crude rubber. That a London price of 1 shilling 3 pence is not unfair is conceded, and the conviction is expressed that leading British planters are not disposed to take advantage of their dominance; but the author contends that it is not so much the present price or the source of supply as the future of both that should give American consumers grave concern. Discussing present and prospective sources, he admits that British, Dutch, and French have a combination of advantages in soil, climate, experience, and abundance of cheap labor hard to offset; and that serious difficulties might be encountered in establishing American sources. Among the latter he anticipates possible opposition, even in tropical Latin-American republics, to negotiating for immigrants needed for large scale production; and, too, the safeguarding of overseas possessions and lines of transport is fraught with anxiety. Yet, even though the factors named be unfavorable, he says, they are not alarming; but they should act as a spur to "experimental work in new districts, and perhaps along rather different lines than those in vogue in the East."

Federal Aid in Rubber Planting

For many a year to come American rubber manufacturers will undoubtedly depend upon British and other Far East plantations for their main supply of crude rubber. The service rendered by the growers has redounded immensely to the advantage of our manufacturers and benefited untold millions of users of rubber goods. The astounding development of the automobile has been made possible through the existence of those plantations, which have furnished in ample quantity the material not only for countless tires, but also for myriads of other rubber articles; and the average price for all the raw material has been reasonable. Indeed, were the output of the rubber plantations ever substantially decreased industry the world over would face a calamity.

Conceding many points in favor of present sources of supply, yet the consumers' situation is not without its

elements of weakness. The time might come sooner than expected when foreign interests would be less friendly to Americans; or, even though they continued to be cordial they might be unable to spare sufficient rubber for American needs. War embargoes are still a possibility, a corner in the price of rubber might yet be engineered, a blight might blast the most promising crop, or some other disaster occur to cut the quantity and boost the cost.

Crude rubber being such a vital need and its abundant and continuous supply so imperative, the wonder is that Americans, in justice to themselves, have not shown livelier interest in projects designed to insure or increase such supply, not only under the Stars and Stripes but particularly within the confines of their country.

It is therefore with real regret that the best friends of the rubber industry note that the allowance made by the federal government for research and experiments, as well as for field and laboratory equipment, on native plants that may be made to yield much fair grade rubber has been reduced from $100,000 (last year's appropriation) to a scanty $20,000 for the current twelve months. True, some $400,000 was provided for rubber commissions sent to the "four corners" of the world, and those bodies are likely to make helpful suggestions about overseas supplies under American auspices, but the unpleasant fact remains that the fund now available for what is also a very commendable endeavor—the development of home-grown rubber—has been cut four-fifths.

Fancy Great Britain, which has lavished millions on distant plantation enterprises, having such an opportunity yet failing to give it the most generous support! Or the wise Dutch and the shrewd French, who have expended so much in helping their nationals to grow rubber in far-off Java, Sumatra, and Cochin-China! Our government can hardly be accused of parsimony or lack of practical patriotism; nor are Americans wanting in enterprise. To what then might be attributed this seeming indifference about providing amply for future national needs? Perhaps to the fact that we are still too youthfully confident in our success, too sure that old resources will never fail us, too impatient of the international-mindedness of older nations, and too skeptical of the lessons they would teach us about the importance of controlling and developing all possible sources of essential materials.

Longevity and Rubber Shoes

THIS is not a plea for the use of rubber shoes as a prevention for coughs, cold and consumption; such propaganda is not needed, for civilization has very generally accepted that form of foot protection, and benefits accordingly. It is rather to call attention to what is perhaps a retroactive benefit that comes to those who supply this boon to humanity.

Contentment, wealth, long life are recognized rewards for service to one's fellow man. The manufacturer of rubber shoes seems blessed in these particulars, especially in length of life. To cite a few present day examples; Former Governor Bourn of the Bourn Rubber Co., active at 90; General William A. Aiken, sometime director of the Hayward Rubber Co., alert as ever at 92; add to this the long list of able men in the seventies and eighties whose names belong to the great rubber shoe companies: Henry L. Hotchkiss, James L. Ford, Erskine F. Bickford, Emmet A. Saunders, L. D. Apsley, and so on.

They are men who are youths at seventy, young men at eighty and still young at ninety. Good luck and long life appear to attend the rubber shoe making. One wonders if it was not the knowledge of this that led Bertram G. Work to add footwear to the Goodrich product; Firestone to his tire line, and Charles B. Seger to his varied interests.

Finally, it is comfortable for the Editor of THE INDIA RUBBER WORLD to recall that he was once a rubber shoe superintendent.

"Hoses"

COLLECTIVE nouns are always a trap for those inept in the use of words. "A hose," singular, and "hoses," plural, occur more and more frequently in the daily press. The rank and file of the language builders, philologers, were they newspaper reporters, would doubtless use some such plural for hose as hosum or hosi. Really it matters little as long as the reader gets the idea. And as usage outclasses derivation, hoses may be not only respectable but elegant one hundred years hence. For the present it will continue to offend those who love good English.

SEASONAL STORAGE OF COAL IS AN ECONOMICAL, PRACTICABLE means of insuring an adequate supply of coal as needed. If consumers will purchase supplies on a uniform monthly delivery basis this will automatically result in sufficient seasonal storage to guarantee coal to the consumer when needed. This will also remove the evils of intermittent mine operations, panicky market conditions, and coal shortages, due to the inability of the carriers to meet large and sudden demands for supplies.

THE LATEST BRITISH DICTIONARY RECOGNIZES THAT t-i-r-e is the correct way to spell "tyre," and states that the latter word means something entirely different—a mixture of rice and milk used as food by East Indians. Thus scorned and execrated by expert lexicologists, a word that has long and faithfully served the British public will be thrown into the discard.

Why not go further and settle the obviously ambiguous orthography of other words that are used in the British rubber industry; for instance, "spewing-machine," "bowls" and "moulds"?

A FALSE BALANCE IS ABOMINATION TO THE LORD: BUT a just weight is his delight. Proverbs, 11:1.

Raising Rubber in California

Prospect Looms of Harvesting Biennial Crops of Latex-Bearing Plants Within Nation's Borders—Equipping New Federal Experimenting Station Near San Diego—Stepping-Up Rubber Content and Lessening Resin of Desert Shrubs—Planning to Avert an Industrial Predicament

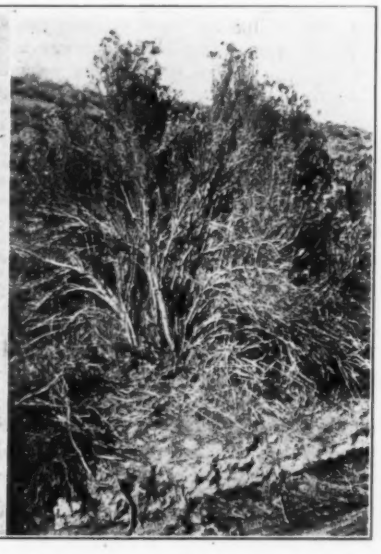
WHILE the rubber requirements of the United States were well supplied from overseas during the World War through the aid of the Allies, this country may not again be as fortunate in the event of an international conflict. The federal government realizing this, and anticipating possibly adverse conditions, has been for a long while conducting experiments in plant cultivation with a view to developing native and acclimatizing foreign trees and shrubs that may ultimately yield enough rubber not only for current needs but also to aid in establishing a national reserve that should offset a shortage due to war, especially in the Far East. So, too, through ample production of home-grown rubber it is hoped to counterbalance a possible failure of a foreign crop or the imposition of prohibitive rubber prices.

The progress made in this direction raises the hope that this national preparedness measure will also result in the reclamation of a vast area of western waste land and the cultivation thereon of herbaceous rubber-bearing plants that may be harvested like wheat, perhaps two or three times a year, and the product of which will go a long way toward meeting the rubber needs of the nation.

Interest Centers on Desert Shrubs

Government experiments with rubber-yielding plants have been largely confined to shrubs indigenous to the arid plains and valleys of the West and Southwest, research workers being quite convinced that it would be a waste of time to try to grow on any considerable scale, even in warm, well-watered sections of this country, rubber trees native only to the steaming jungles of the tropics. But in certain desert shrubs, as, for instance, some species of Asclepias, notably *Asclepias subulata,* a plant somewhat resembling Spanish broom, the federal experts believe that they have found a potential source of rubber that should in time largely supplement, though it may never supplant, the wild product of Brazil or the plantation crude of Malaya.

Asclepias Subulata Plant Five Feet High



Chrysothamnus Nauseosus or "Common Green"

An experimental station has been maintained for several years at Bard, on the California side of the Colorado river about twelve miles north of Yuma, Arizona, in charge of Harry H. Gunning. There, under ideal desert conditions, seed has been obtained from carefully chosen specimens of *Asclepias subulata;* and from that seed hundreds of choice plants are now being raised at a newly established station a mile and a half south of Torrey Pines, near the Pacific shore and twenty miles north of San Diego. This United States Acclimatization Garden, as it is officially known, is under the superintendence of Charles G. Marshall.

While the government is incidentally cultivating Chinese corn, Chilean potato-like oca, and other exotic plants, its main purpose here is the raising of rubber plants. The tract is part of the pueblo lands owned by the city of San Diego, a part of the city's prospective park area, and is leased to the government for a long period for a nominal sum. The soil is peculiarly rich, being largely black leaf mold, two feet thick, and still in a virgin state. About twenty acres of the land on a plateau between the State Highway and the Santa Fe Railroad have been cleared of brush at a cost of $100 an acre, and here in greenhouse and the open field is being carried on the cultural work that may one day have a far-reaching effect on the nation's rubber industry.

Exceptionally Good Equipment

Nine buildings are being erected, including an office, a laboratory, seed and implement houses, a greenhouse, and dormitories, all made of sun-baked bricks of adobe clay mixed with straw, the outer walls being coated with linseed oil to make them dampproof. There is ample space for new buildings when needed. Adobe construction is preferred for landscape effect, as well as for climatic and other practical advantages. A large reservoir has also been built, water being pumped from the city main, and an extensive system of irrigation has been planned. It is intended to make the station part of the city's educational system. Unlike Bard, this region is rarely visited by frost, nor does it suffer from mid-summer baking temperatures often experienced at Bard. In the sheltered *canyadas* on the east slope of the tract unusual facilities are afforded for the raising of tender rubber and other plants. In fact, San Diego County is exceptionally favored with regard to soil and climate, and in some parts may be seen rubber trees of the *Ficus elastica* type comparable in size and vigor with fine specimens in Assam and other parts of India.

The new station will to a large extent take the place of a smaller one that has been maintained for several years by the government at Chula Vista, nearly midway between San Diego

and the Mexican border; and from it numerous rubber and other plants, seedlings and cuttings, have recently been moved to the new Torrey Pines station, extreme care being taken to have them very clean and to keep them free from nematodes and other pests. In the new locale gophers are the only pests that have troubled the gardeners thus far.

In addition to *Asclepias subulata*, considerable attention will also be given to the possible improvement of guayule and other semi-arid alkali-resistant plants that may yield not only rubber but also resins and paper pulp in commercial quantities. Several species of Euphorbia, to which genus Hevea and Manihot belong, are also under observation, as well as some latex-bearing cacti, even though the experimenters are not quite as confident of obtaining practical results with them as with the desert plants. The new station cooperates with the Carnegie Institution of Washington, which for several years has also been engaged in extensive field exploration, cultural experiments, and chemical examinations, centering chiefly, however, about milkweed and Chrysil.

Euphorbia Antisyphilitica

Euphorbia Coerulescens

Nature of Asclepias Subulata

Asclepias subulata is a perennial and grows rapidly from seed or root sections on soil that might sustain only cactus. It is a rounded herb, woody at the base in some types, 3 to 8 feet high, 2 to 6 and in some cases 10 feet broad, flourishing best in low places where rain water accumulates, but narrow and sparsely stemmed when on dry upland slopes; roots deep, ending above in a much-branched, quite leafless crown; stems ranging from 12 to 30 in poor plants to as many as 500 in robust specimens; and having dull, greenish-white flowers after the winter rains. It is a characteristic desert plant of southwestern United States and northwestern Mexico.

Asclepias subulata contains from 2 to 6.4 per cent of rubber in its stems, occurring somewhat in the form of an emulsion in the latex, which fills the vessels of the highly specialized laticiferous tissues. While the rubber can not vie with upriver fine Pará, plantation crude, or even with Chrysil, the product of the *Chrysothamnus nauseosus* shrub, it may be very useful in mixing with other rubbers of high grade. The latex yield is sufficiently fluctuating to indicate that superior, highly yielding strains could be developed through breeding and selection. So, too, the rubber in the plants appears to vary with the species, the strains within each species, and with surroundings during growth.

Other Promising Asclepias

At least two other desert and native Asclepias also encourage the hope of obtaining from them a fair amount of rubber. They are *A. sullivanti*, with a present yield of from 1.2 to 8.1 per cent; and *A. galliodes*, giving from .06 to 5.2 per cent. These milkweeds, with *A. subulata*, are being jointly investigated by the federal government and the Carnegie Institution workers.

Chrysil Rubber Possibilities

Specific work in rubber cultivation began as a war emergency measure in 1917, when a chemical laboratory was fitted up at the Alpine Laboratory at Pike's Peak to operate with a desert laboratory and one at the University of California in Berkeley. Professors Harvey Monroe Hall and Thomas Harper Goodspeed, who supervised the governmental survey and tests, tried out 18 genera and 30 species. While most of the specimens yielded too minute an amount of rubber to make the plants of commercial significance, it was found that four species, however, contained enough rubber to warrant further investigation, and one particularly, *Chrysothamnus nauseosus*, a variety of "rabbit brush," had sufficient rubber to make it interesting.

The product of *C. nauseosus* was named Chrysil rubber. The species is indigenous to a considerable territory extending from eastern Oregon to the Mexican border, and is most abundant and of maximum size in the Great Basin area. The best samples carried 3 per cent of rubber, which content, it is believed, may be markedly increased. A rough estimate gave the possible production of Chrysil rubber in the entire area of 300,000,000 pounds yearly.

The *C. nauseosus* shrubs range in size from 3 to 8 feet high and of similar breadth. As in guayule, which has been made to yield 15 to 16 per cent of rubber, the rubber in *C. nauseosus* is not found in latex form but occurs in the separate cells, chiefly in the parenchymatous elements of the cortex, appearing when the plants are three or four years old. Dr. David Spence, after studying a sample, declared the rubber to be of high grade and average quality, "not as good as the best fine Pará, but a great deal better than most Africans and low grades."

Euphorbias Which Look Promising

Two plants of a juicy, cactus kind which the federal plant experts are trying out at the Torrey Pines station, and which may ultimately yield rubber of some kind, the indications being encouraging, are *Euphorbia antisyphilitica* and *Euphorbia coerulescens*.

E. antisyphilitica, also known as *Trichcrostigma antisyphilitica*, or candelillo in its native Mexican habitat, yields a useful wax and had some repute as a medicinal specific. It is slender, erect, with rod-like branches, nearly leafless, and grows from 1 to 3 feet high.

E. coerulescens is a low shrub with a 4-5 angled stalk; branches 3-angled at the base and 4-5 angled above, and 2 inches thick; has stout half-inch spines and scale-like triangular leaves. It is a handsome, compact plant, its color chiefly bluish-green, and is a native of South Africa.

Reduced Appropriation a Disadvantage

While guayule is already a commercial success, due to private enterprises and the expenditure of nearly a million dollars in research and experimental work, the federal experimenters hope to still further increase its rubber content of 15-16 per cent and possibly lessen its resinous character. Unfortunately the federal workers are handicapped with very limited funds. In 1923 Congress appropriated $500,000 for investigating the world rubber situation and for national rubber development work; and of this sum $100,000 was allotted for the latter. For 1924, however, it is stated the amount available for the stations is but $20,000, a sum manifestly inadequate for carrying on, much less extending their important operations. Despite the disadvantage, the federal workers are pursuing their tasks with unabated enthusiasm, hoping for more generous support next year from the government.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

Present Situation Regarding Balloon Tires

Fundamental Conditions Confusing—Unexpected Demand for High-Pressure Tires—Change to Small Wheels an Obstacle—Tire Trade Waits Further Developments

By H. P. Wilkin

THE situation that developed during the past summer in the tire field has been somewhat perplexing. The latest reports and the actual conditions in the trade are somewhat contradictory and confusing. On the one hand, the tire business had an unusually early and unexpected pick-up so that in July and August the factories were putting on more men and running at full capacity. The demand was so heavy that some companies were temporarily short of some sizes to fill immediate orders. Also, most of the new car models were specified as equipped with small-diameter wheels and balloon tires. Some of the news reports from Akron told of increased production of balloon tires, while the Rubber Association reports showed an increase in balloon tire production from 190 odd thousand in March to upward of half a million in August.

High Pressure Tire Demand Spurs Industry

On the other hand, dealers do not appear to have been moving balloon tires to anything like the volume expected. Sales of the balloons were large last winter and during the early spring, considering that this type was a new development, and from the ready acceptance of them by the public and the keen interest shown it was anticipated that the sales would increase rapidly through the season. But the demand that suddenly spurred up the industry was almost wholly for high-pressure tires.

It is difficult to reconcile these facts, and the situation has been giving some concern to the manufacturers. It is almost universally conceded that balloon tires contribute wonderfully to the smoother and more luxurious riding of the cars, that they almost eliminate the tendency to skid, that they give better traction, improve the braking and increase the life of the cars. But many dealers have been skeptical of balloon tires from the first and others have become so after selling some, or trying to do so. There have been complaints that the tires were not standing up as the high-pressure tires do; that they puncture, cut and blow out more readily and that they do not wear so well.

Of course, it is to be expected of any new thing that the users will be hypercritical and blame the innovation for occurrences that they would take as a matter of course with equipment they were accustomed to use, and in this case, to attribute to the tires faults of the car which would ordinarily escape their attention. However, if the balloon tire is going to be the success that was predicted, there is no doubt that it will have to give service approximately equal to that given by high-pressure cords. The manufacturers attacked the problem and have been experimenting with different constructions all summer.

Why Balloons Were Not Generally Accepted

It is open to question, however, whether the failure of the balloon tire to make more rapid headway during the summer is due to dissatisfaction of users with the service it gave or to other causes. Depressed conditions in business generally doubtless had much to do with it, as money was certainly very scarce in many parts of the country and car owners would not spend any more money than absolutely necessary on tires to keep their machines running. Now, a set of balloon tires represents a considerable outlay for an old car, even if a set of small wheels is thrown in gratis, and the work of converting the wheels involves an additional outlay for facing, boring bolt holes, etc. The majority of owners, contemplating such an outlay, decided to get along at least until next season with high-pressure tires, replacing one or two as needed. A good many, unquestionably, expect to buy new cars next season equipped with balloons. Such cars, they expect, will be designed for the tires, will have steering gears designed to render steering with the balloons easier, have speedometers geared for them and fenders shaped to give all the necessary clearance.

Automobile dealers, under advice from their factories, discouraged their own customers from fitting interchangeable balloons on standard rims, asserting that there would not be enough clearance, that they would make steering harder, would cause the cars to shimmy at high speed and would cause the speedometer and odometer to register incorrectly. This was not disinterested advice, however, as the dealers and car manufacturers wanted to dispose of the cars with their standard tire equipment. They did not want to have the tires thrown back on their hands.

Wheel Change Serious Obstacle

The same thing applied to a change to small-diameter wheels. The car manufacturers could not supply the smaller wheels in sufficient quantity early in the season and did not want to take back the larger wheels. If they could hold off the demand until this winter they could put out the new cars equipped with small wheels and balloon tires, which they are now doing.

There was a great deal of uncertainty on the part of car and tire dealers and of car owners last winter and all through the season with regard to the best size of wheels and tires to use. The claims for small-diameter balloons and interchangeable sizes were contradictory and naturally caused the car owners to hesitate and defer buying until the situation was more settled. In many cases when small wheels were put on, the wheel jobs turned out were poor and unsatisfactory, and as this information got abroad it reacted on the balloon tires.

Balloons Not Wholly Accepted by Tire Trade

Furthermore, it is highly probable that most motorists decided to wait a season to see how the new tires stood up and what the users of them had to say. Ordinarily it takes from one to three years to determine what mileage a tire will give, but if it goes through a season and gives 5,000 to 10,000 miles without showing excessive wear it is a sufficiently convincing test.

It is a common experience that when a new article is put on the market it is bought by a considerable number of persons who are eager to give it a trial and be first to adopt it. When this demand has been satisfied, there comes a reaction in sales until the article has proved its worth, after which sales begin to pick up gradually and it becomes firmly established in trade.

Many of the 5.77 balloon tires sold last winter have been run 15,000 to 18,000 miles or more and the 7.30 size, 20,000 to 25,000 miles, which is regarded by the purchasers as very satisfactory service. Even if they could get more mileage from high pressure tires, they would not change back, realizing that the greater riding ease, driving safety and cushioning of the car are more than worth the difference.

There has, naturally, been a very limited market so far for small-diameter balloons for replacement, for the simple reason that so few cars are yet running on twenty and twenty-one inch wheels. Next year this market will expand considerably, and, as balloons become the vogue on new cars, more owners of cars now in service will want to change over to low-pressure tires and will

do so if money conditions are more favorable, as seems probable.

The Need of Standardized Construction

Car manufacturers have shown their approval of the new type of tires by adopting them as standard equipment on their new models, and this will certainly increase the confidence of the public. Some car makers, however, have insisted on having low-pressure tires made with six plies of cord fabric and with somewhat smaller sectional diameters than those put out by the tire makers. The question of the best number of plies has, indeed, caused the tire makers much uncertainty. Engineers at the tire plants have been convinced that four plies are best for most sizes, while perhaps two are sufficient for small sizes for the lightest cars and six are required for the big sections for heavy cars.

A 5.77 or 6-inch tire that is made with six plies and designed to be inflated to forty or more pounds pressure ceases to be a real balloon and is a semi-balloon. The theory of the balloon tire is that it carries very low inflation and flexes to double the extent of the high-pressure tire. To make the large-section tire sufficiently light and avoid overheating and rapid wear of the fabric from excessive flexion requires a reduction in the number of plies of fabric. Many drivers of medium-weight cars run their high-pressure tires on only forty to forty-five pounds pressure. These tires have six or more plies of fabric, so if balloon tires are made with as many plies and carry as much inflation, wherein will they make riding any easier?

It is not generally known, but it is a fact, that some large tire manufacturers are now putting only four plies in their 4-inch and 4½-inch high-pressure tires. These tires present less surface to the ground and have a somewhat thicker tread than balloon tires, for which reasons they may be less vulnerable to cuts and punctures than corresponding sizes of balloons and may wear longer, notwithstanding that the weight supported per square inch of bearing surface is nearly double.

It is obviously for the technical men to find out what is the correct number of plies for each size and type of tire. Users and dealers can not know, but they do know the kind of service the tires give and the technical men must produce tires that give general satisfaction. The possibility remains that the use of larger and stronger cords and few plies of fabric will produce the most desirable results. Even a 2-ply tire made with large cords and a thick, tough tread may be the solution of the smallest size balloon.

If two more plies are put into the present 4-ply balloons, the prices of the tires must be increased correspondingly and will inevitably be materially higher than the high-pressure tires having the same number of plies but smaller section. And the manufacturers will be loath to add anything to the cost of making the balloons and consequently to the selling price, which is already an obstacle to their sale.

Increase in the weight of the tires by the addition of more plies of fabric and of more sidewall and tread rubber is objectionable, moreover, because it adds to the unsprung weight of the car and increases the centrifugal effect in the tire, which is more pronounced with the low air pressure, the large cross-section and the increase in rotation speed of the small wheels.

Car and tire manufacturers have confidence in the future of the balloon tire, a great many present users are thoroughly satisfied with them and declare they will never go back to the use of high-pressure tires, and it seems, therefore, that all that is required to develop large sales is to improve the serviceability of the tires and to convince the dealers and the public that they will not only give greater riding comfort than high-pressure cords but will last as long and give no more trouble because of punctures, cuts and blowouts.

IMPORTS INTO TIENTSIN, CHINA, OF INDIA RUBBER MANUFACTURES, exclusive of tires, reached a value in 1922 of $38,105, and in 1923 had risen to $122,566.

American Production, Consumption and Exports of Rubber Goods, 1923[1]

According to official statistics issued by the Census Bureau, American exports of rubber goods during 1923 constitute only 4 per cent of the country's total output. During the past year the total production of rubber goods, after subtracting rubberized fabrics, reached a value of $930,767,044, while the exports of corresponding rubber products were valued at $37,619,086.

From the tabulation below it will be noted that, although the United States last year supplied between 20 and 25 per cent of the foreign tire trade, the number of casings exported represented only 3 per cent of the country's production. Shipments abroad of truck tires constituted a much higher percentage, while the exports of "other tires" for rubber-tired carriages stood at the high figure of 17.7 per cent. It has also been estimated that United States exports in 1923 of rubber footwear constituted 29 per cent of the quantity and 38 per cent of the value of such exports from all rubber manufacturing countries during the year. The records show, however, that only 4 per cent of the domestic production of rubber boots was exported, while shipments of canvas rubber-soled shoes constituted only 14.5 per cent of the volume and 10.3 per cent of the value of the goods manufactured. It will also be noted that only about 7 per cent of the American production of mechanical rubber goods was shipped abroad, although the United States belting exports during the year represented about 40 per cent of the total world exports of such goods, the closest rival being Great Britain, which exported 30 per cent of the total.

In the rubber hose trade the United States, although exporting only 5.1 per cent of its total output, also led all other rubber-exporting countries, with 35 per cent of the total, followed by Germany with 29 per cent. The rubber industry of the United States, with an over-capacity for production, would find it advisable to still further develop the foreign markets.

UNITED STATES PRODUCTION, EXPORTS, AND DOMESTIC CONSUMPTION OF RUBBER PRODUCTS, 1923

Commodities		Production	Exports	Per Cent Exported	Domestic Consumption
Automobile casings	number	45,362,747	1,362,741	3.0	44,000,006
	value	$457,374,439	$15,293,103	3.3	$442,081,336
Automobile tubes	number	56,933,646	1,016,384	1.8	55,917,262
	value	$74,660,021	$1,740,329	2.3	$72,919,692
Motorcycle and bicycle casings	number	3,668,114	72,391	2.0	3,595,723
	value	$5,016,050	$269,858	5.4	$4,746,192
Motorcycle and bicycle tubes	number	642,696	57,885	9.0	584,811
	value	$672,955	$53,055	8.0	$619,900
Solid truck tires	number	923,549	96,849	10.5	826,700
	value	$28,203,142	$2,376,280	8.4	$25,826,862
Other tires	value	$1,290,534	$229,226	17.7	$1,061,308
Rubber boots	pairs	10,097,896	395,023	3.9	9,702,873
	value	$23,573,097	$947,536	4.0	$22,625,561
Rubber shoes and overshoes	pairs	60,102,775	1,083,625	1.8	59,019,150
	value	$83,031,542	$903,379	1.1	$82,128,163
Canvas rubber-soled shoes	pairs	26,114,073	3,791,018	14.5	22,323,055
	value	$28,382,258	$2,920,412	10.3	$25,461,846
Rubber soles and heels	value	$28,557,858	$678,798	2.4	$27,879,060
Rubber belting	value	$24,266,881	$2,032,310	8.4	$22,234,571
Rubber hose	value	$33,848,572	$1,734,751	5.1	$32,113,821
Rubber packing	value	$5,627,589	$731,306	13.0	$4,896,283
Hard rubber goods	value	$26,019,468	$646,646	2.5	$25,372,822
Druggists' rubber sundries	value	$19,832,592	$774,443	3.9	$19,058,149
Reclaimed rubber	pounds	121,541,445	4,508,490	3.7	117,032,955
	value	$11,714,438	$469,193	4.0	$11,245,245
Waterproof clothing	value	$12,975,862	$646,966	5.0	$12,328,896
All other rubber manufactures	value	$65,719,746	$4,551,348	6.9	$61,167,898

[1] By E. T. Holt, assistant chief, Rubber Division, Department of Commerce, Washington, D. C.

ACCORDING TO *Commerce Reports*, JAPAN EXPORTED DURING June of the present year rubber tires to the value of 147,000 yen, while in the month following such exports had reached a value of 490,000 yen.

The Manufacture of Molded Garden Hose[1]

Comparison of Short and Long Length Hose—Economy and Construction—Method of Making Lead Molded Hose—Characteristics of Molded Hose

HOSE for all purposes has been made generally in 50-foot sections. This length is considered standard and all equipment for hose making and curing is planned for that length product whether the hose is built with frictioned duck plies or is rubber-lined circular woven fabric fire hose.

Molded garden or small water hose was developed to produce small hose in continuous lengths of 500 feet, because of the commercial advantages afforded by reeled hose of that length, which can be cut and coupled as desired. The method of curing small hose in continuous long lengths by heating it encased in a sheath of lead as a mold has proved more practical than all other systems depending on various forms of metal molds. The expiration of the patents on the lead molding system makes it generally available and the system has been installed by many of the principal manufacturers of garden hose both here and abroad.

Ordinary Garden Hose

The familiar rubber and fabric garden hose has always been made and vulcanized on steel poles 50 feet long. Its construction comprises a rubber lining or water way of rubber tube wrapped around by several plies of rubberized duck. This fabric affords the strength necessary to resist the pressure of the water contained within the hose in service and gives the hose strength lengthwise as well. The hose is completed by the addition of a covering of sheet rubber made of tough composition to resist wear when the hose is dragged about on the ground.

Molded Hose

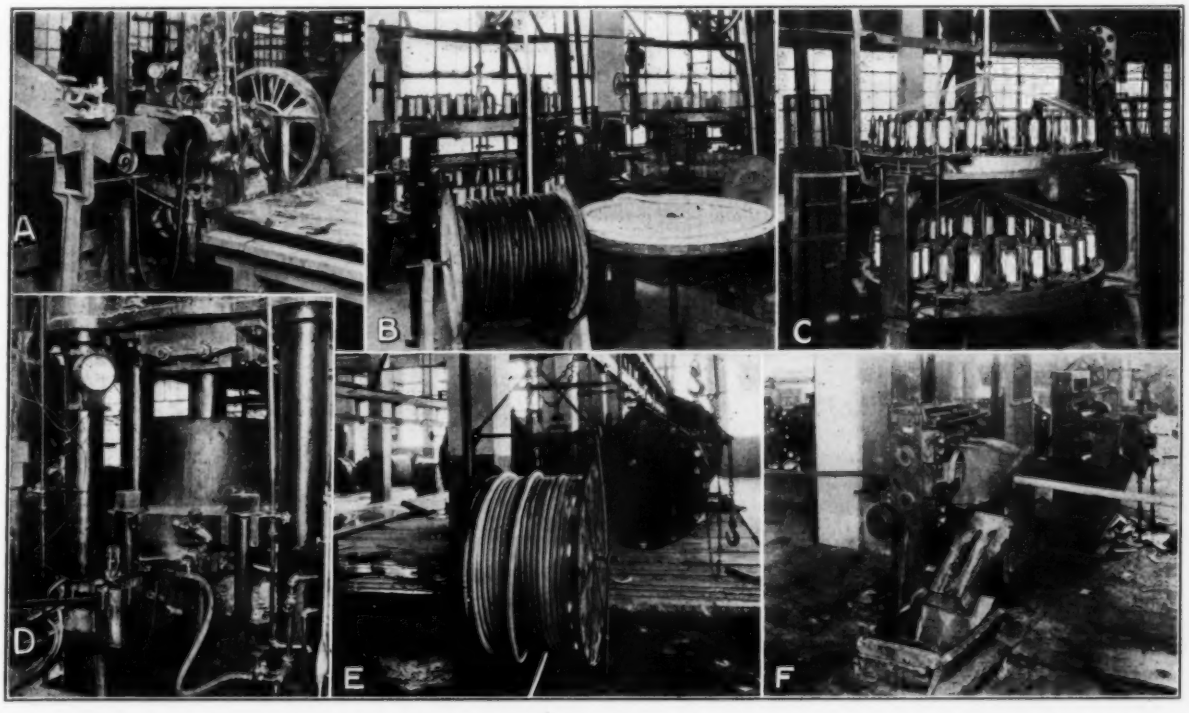
Molded garden hose, in contrast with fabric garden hose, is made in lengths of 500 feet. Naturally its construction differs from that of the ply hose and is specially adapted to continuous production and a radically different method of vulcanization.

Making Continuous Length Hose

The preparation of hose stocks and their assembly in continuous production utilizes the usual familiar rubber working machinery, supplemented by a conveying system for uninterrupted progress from stage to stage of manufacture.

In the rubber mill room the tube stock is mixed on 2-roll mills equipped with continuous feed mixing aprons. This device is an endless belt extending the full width of the mixing rolls driven by contact with the rear roll. This apron receives the compounding ingredients that fall between the rolls and discharges them above and between the rolls for further mixing action. This process is continuous until the rubber has absorbed all the ingredients.

When completed the batch is cut from the mill automatically by a screw-propelled knife blade which delivers the stock from the front roll in a continuous strip into a receptacle, ready for conversion into hose tube.



(A) Making Continuous Length Hose Tube. (B) Hose Tube Before and After Braiding. (C) Double Deck Hose Braider. (D) Water Cooled Lead Covered Hose Leaving Die of Press. (E) Reels of Lead Covered Hose Ready for Vulcanizing. (F) Machine for Removal of Lead Casing.

[1] Data and illustrations supplied by The Boston Woven Hose & Rubber Co., Cambridge, Massachusetts.

Making the Hose Tube

The mixed rubber, warm from the mill, is fed into a tubing or extruding machine, from which it issues through an annular die at the opposite end as a tube of desired size and length. The operation of tubing is represented in illustration A, showing a loop of tubing just from the die ready to be carried on by belt conveyor to the next step in the hose production.

The tacky inner walls of the tube, as fast as formed are prevented from accidentally adhering by inflation with air carrying soapstone dust. The tube is held inflated to about 2 pounds air pressure by sealing its ends as it is reeled in 500-feet lengths ready for application of two plies of cotton yarn braided over it as a strengthening element. Illustration B shows a reel of inflated tubing in the foreground ready for braiding.

Hose Braiding

Tubing from the reel is fed from below the braider and drawn upward by the operation of the machine as shown in both illustrations B and C. The first ply of braid is laid direct upon the tube as it passes the lower deck of the braider. As the tube advances to the second deck two strips of calendered rubber are fed upwardly upon it from reels at either side. These strips constitute the intermediate layer or ply of rubber to secure adhesion between the first and second plies of braiding. The latter as it forms upon the hose binds the overlapping edges of the rubber strips together in a seamless joint. The double braided hose is shown on a turn-table at B. It is coiled from this table into a metal can for delivery to a second tuber for application of the outer rubber cover.

Applying the Rubber Cover

The operation of covering the braided outer ply of cotton yarn with rubber is similar to the rubber insulation of wire. The hose, still lightly inflated, is drawn through the hollow forcing screw of the tuber and emerges at the die of the machine covered with a uniform definite thickness of rubber. The composition of this rubber differs from that of the internal tube by being more resistant to wear. The color is usually black or red but this, however, is no indication of quality.

The Lead Covering Press

The method and apparatus used for applying the lead sheath to the hose ready for curing is the same as employed for lead covering electric cables. Briefly, it comprises a lead melting furnace and a very heavy hydraulic forcing press. The press weighs about 200 tons. The metal for forcing is contained in a cast steel pot through the lower part of which is a passage for the hose. The latter traverses this passage from one side to the other of the lead cavity and as it emerges through a die it receives its casing of lead. The die of the lead press is usually shaped to give the surface of lead next to the hose the fluted form which is commonly seen on molded garden hose. Illustration D shows the die side of the lead press with the lead covered hose being cooled by jets of water as it leaves the press and proceeds toward the left on its way to the curing reel illustrated in E.

Curing or Vulcanizing

The operation of curing consists in running a series of reels of leaded hose on tracks of an overhead trolley conveyor into an ordinary horizontal steam vulcanizer.

Here the hose remains sufficiently long in open steam atmosphere to become vulcanized, following which the reels are removed at the opposite end of the vulcanizer from which they entered and pass on by the overhead trolley to be stripped from the lead molding encasement.

Removal of Lead Casing

The removal of the lead from the cured hose is rapidly effected in the machine illustrated at F. The lead-encased hose is entered into the bushing or die in the front of the machine and about a foot and a half of it is pushed through to the opposite side. Two horizontal splitting knives cut almost through the lead covering, dividing it into upper and lower strips as it enters the machine. Each strip is turned backward by hand and entered respectively into upper and lower pairs of corrugated driving rollers. A hand wheel with pin clutch is used to drive the machine when thus starting the strips through the pulling rollers which draw the remainder of the hose through the machine.

The two lead strips pass forward into their respective pairs of cutting rollers, where knives cut them into sections six inches long as the power driven machine removes the metal from the hose and discharges it through the chutes to the melting furnace on the floor below.

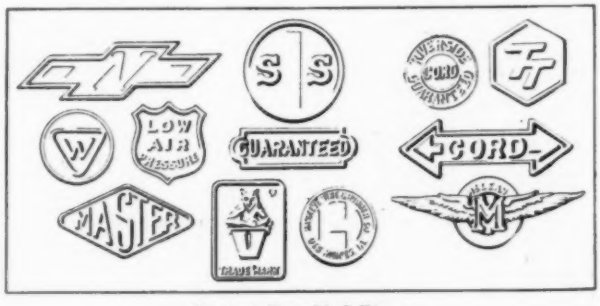
The usual maximum speed of the hose through the machine is 60 feet per minute. This speed can be increased somewhat if desired on hose half an inch and smaller.

It is only fair to add that for the same money a better piece of wrapped hose can be made than molded hose. The latter, however, has the advantage from a sales point of view of better exterior appearance and the convenience of greater length in one piece. Actually it has not as high bursting strength and will not give as long service.

Tire Medallions[1]

A well designed and artistically engraved trade mark has much to do with arresting attention, particularly if displayed in color. The appeal of quality and satisfaction in service are represented in the trade mark, hence the importance of keeping it before the public in attractive form.

Distinctive trade mark medallions in color are especially effective on automobile tires, and, like handwriting, instantly reveal



Typical Tire Medallions

the individuality of the maker and his product. A selection of attractive designs is shown in the accompanying illustration.

Trade marks of this sort are prepared from special engraved dies from which embossed labels are struck up in a press upon thin aluminum previously backed with thin calendered, colored, uncured rubber. In this form the medallions are ready for attachment to the walls of uncured tires or any other rubber goods, by simply freshening both rubber surfaces with gasoline before applying the medallion.

Tire serial numbers and any other factory markings, labels, designs, etc., are similarly made, either with or without colored backing. A brilliantly colored neat trade mark medallion applied to a tire attracts attention and differentiates its manufacturer with greater certainty than any other device.

Supplies of labels or medallions are usually obtained from concerns that specialize in this business, which has developed to positive dependability and quick service.

[1] The Dickey-Grabler Co., Cleveland, Ohio.

"PNEUMATIC TIRES," BY HENRY C. PEARSON. An encyclopedia of tire manufacture, repair, rebuilding, machinery and processes.

The 1925 Tennis Line

Featured by Vulcanized Crêpe Soles—Basketball Shoe Developments and Distinctive Types—Sport Shoes—Inexpensive Durable Work Shoes—Pumps and Bathing Shoes—Necessity of Standardization

ALTHOUGH handicapped by the late spring, retail sales of rubber-soled tennis shoes attained surprising volume last summer, and as a result the advance orders for 1925 indicate an increased output over this year of at least 25 per cent, conservatively estimated. The 10 to 15 per cent price reduction has acted as a stimulus to the placing of advance orders, enabling the manufacturers to plan production and thereby produce quality goods. Furthermore, the remarkable success of the new vulcanized crêpe sole on tennis shoes has brought about a recovery of some of the business captured by the leather and canvas welt shoes with the plantation crêpe sole.

Vulcanized Crêpe Soles

When the uncured crêpe sole first made its appearance, the rubber footwear technical men set out to produce a sole like it which could be applied practically to the kind of shoes they were equipped to make. They found that by processing crude crêpe rubber on a cold calender after mixing with curing agents, they could sheet out a perfect duplication of plantation crêpe soling, from which soles could be died out or cut with a skive on a Wellman or Patten machine and pressed on shoes before vulcanization, the same as regular type compounded soles. By using high-powered accelerators, inorganic accelerators such as litharge were discarded, and the color obstacle overcome. These vulcanized crêpe soles proved to be practically indestructible, their roughened surfaces affording traction never before possible in rubber soled shoes. This brought up the problem of balance, as the first test pairs which went out in the early summer of 1923 wore out the canvas uppers long before the soles. Further tests proved that the thick, clumsy crêpe soles which were being put out on leather shoes were unnecessary in the cured type, with the result that thinner soles were used, making lighter weight, more stylish, and perfectly balanced footwear.

The vulcanized crêpe sole is probably the most ideal shoe sole ever produced. Light in weight, tough, resilient, non-spreading, affording traction on wet pavements and impervious to the action of oil or gasoline—leading objections to uncured crêpe—it only awaits the development of a method of application to supplant the present sole on leather shoes.

No method has as yet been devised for applying cured crêpe soles to leather and canvas welt shoes. The stock when vulcanized is so tough that no stitching needle will penetrate it, and cementing is out of the question because the sole is already cured before it can be applied. On the other hand, in the tennis shoe, the sole is cemented, pressed on by machine, and vulcanized in one unit with the shoe.

It is obvious, therefore, in view of the above facts that the 1925 line should feature vulcanized crêpe soles extensively. Almost every type of shoe is offered with a crêpe sole, and some companies have introduced them on lumbermen's overs for winter sport wear, lightweight fishing boots, and probably a crêpe sole overshoe is not far distant.

Basketball Shoes

The highest priced and sturdiest tennis shoes are made for indoor basketball where there is a big volume of footwear sold. A few years ago, basketball players bought rubber taps and applied them to various kinds of leather gymnasium shoes. When the rubber footwear manufacturers entered the field, the players were satisfied with a pair of shoes that lasted a single game, if they could only get the type of shoe which would furnish the qualities desired. Today they have just cause for complaint if their shoes fail to last a playing season.

Previous to the advent of crêpe soles, two general types of basketball shoes were marketed, the molded suction cup sole, and the buffed pure gum sole. The former found big vogue in the Mid-west where games were played on regular gymnasium floors, whereas the latter was developed for eastern use where many of the games were played on smooth, waxed dance floors, necessitating more positive traction. While the vulcanized crêpe sole has to some extent superseded the buffed pure gum sole, the molded suction cup sole is still widely used for basketball, as certain players have found that the crêpe sole gives too much traction, causing straining of the leg muscles by stopping too suddenly.

Probably more thought has been spent on perfecting the ideal basketball shoe than on any other type. The weight, fit, insole, lacings, outsole, toe cap—all have been carefully designed upon recommendations of players and coaches. First, they specified as light a weight shoe as possible yet durable, as too much weight in the shoe handicapped the speed of the player; fit with snug arch support became very essential; an insole which would not burn the feet was required. For this the Armstrong Cork Co.'s "Korxole" has the qualities of durability and stiffness as well as non-insulation; Kenworthy Bros.' "Kendex," a felt product, has been widely used; leather is sometimes specified. The United States Rubber Co. and the Hood Rubber Co. have developed composition insolings of their own manufacture which work out very well. Rawhide laces, and mercerized cotton of high tensile strength are used to eliminate the possibility of lacings breaking in a game. Reinforced toe caps to prevent breaking through at the toes have been adopted.

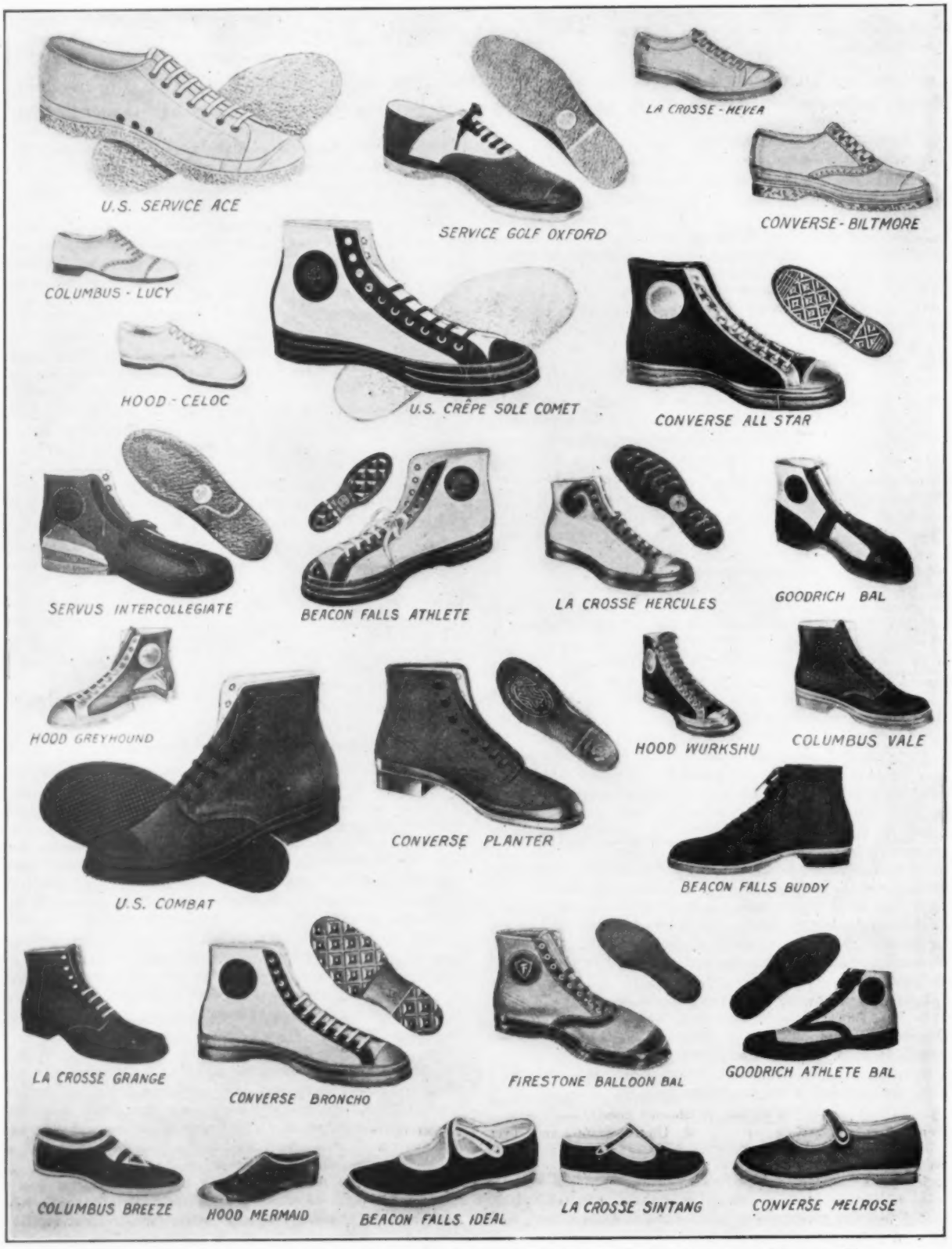
Distinctive Shoes for Basketball

Converse Rubber Shoe Co., which has made a specialty of basketball shoes for many years, offers a new feature this year, known as the peg-top construction, which consists of raising the height of the shoe at the back, aimed to eliminate discomfort or cutting at the tendon. Converse offers its regular standby for basketball, the "All-Star," "Non-Skid," and "Professional," with two additions, the "Hickory," which is a crêpe sole "All-Star" steam cured, and the "Flyweight," which is built extra light for tournament use.

Hood Rubber Co. has concentrated its basketball line into two staunch numbers, the "Greyhound," a vulcanized "Smokrepe" outsole product, with sponge rubber heel pad and combination steel fiber shank as new features; and the "Conference," a similar shoe with the molded sole. Both of these shoes are blucher or lace-to-toe type.

One of the most distinctive basketball shoes is the "Vale," Columbus Rubber Co., Montreal, which carries a crêpe sole and reinforced leather front stay with ventilating holes, and leather insole. The United States Rubber Co.'s first grade basketball shoe is the "Comet," made with the plain buffed sole and the crêpe sole as desired. La Crosse Rubber Co. has the "Hercules," a molded sole shoe, and the "Amazon" in the crêpe style. Both of these shoes carry the distinctive La Crosse feature, the heart-shaped ankle patch instead of the conventional circle, which is a continuation of the eyelet stay, affording extra reinforcement at the ankle.

The B. F. Goodrich Rubber Co., Akron, Ohio, which has entered



Vulcanized Crêpe Soles Are Outstanding Features of the 1925 Tennis Line for Basketball, Sport and Summer Wear

the tennis field fairly recently to complete their line of footwear, makes a bid for basketball business with a pure gum sanded sole shoe in preference to crêpe.

One of the most recent tennis producers, the Servus Rubber Co., Rock Island, Illinois, located in the heart of basketball territory, offers both types of shoes for this sport, the Ralph Jones "Professional," with a molded sole, and a newcomer, the Dr. W. E. Meanwell's "Intercollegiate" with orthopedic heel features, arch support, crêpe sole, and cushion heel.

Beacon Falls Rubber Shoe Co. sticks to its time-tested "Grip-Sure," a molded sole shoe, and presents a new crêpe sole edition, the "Pivot." The Lambertville Rubber Co. will soon place on the market the "Jimmy Brown Athletic Shoe" for professional basketball players. It has a leather top with a vulcanized sole to prevent skidding.

Converse has just put out the third edition of its basketball year book, giving the scores and photographs of the leading college, school, amateur, and professional teams, with hints for players and interpretations of the latest rules. Servus is also putting out a basketball handbook distributed free of charge to coaches and players throughout the country.

Sport Shoes

By actual count, there are unquestionably more followers of tennis than there are basketball, hence the name "tennis" as generally applied to canvas vulcanized footwear. All types of these shoes are used for lawn tennis, from the plain untrimmed old-fashioned garden variety of "sneaker" used by the high school boy, to the crêpe sole oxford blucher "Service Aces" made by the United States Rubber Co., worn by player like Wm. Tilden. In fact, crêpe soles have found practically unanimous approval from tennis players for use on dirt, clay, and grass courts.

A few years ago to see a man in knickers marked him as a dyed-in-the-wool golfer, but today it does not signify that he knows a mashie from a putter. Similarly, sport shoes are worn by people whose heaviest exercise is to stand up and stretch for the "lucky seventh." Servus Rubber Co. "Golf Oxfords," La Crosse "Hevea," Columbus "Lucy," Hood "Celoc," and Converse "Biltmore" are types in the new line which will sell widely for general as well as sports wear as long as sport clothes remain fashionable.

Two Types of Workshoes

The demand for an inexpensive yet durable work shoe is met by two types of footwear in the 1925 list. First there is the heavy duck, bal-blucher cut tennis with a calendered rubber sole and molded heel, in reality a heavy heel "sneaker." The second is a leather or horse-hide welt army last shoe with a molded composition sole and heel. The Hood "Wurkshu," La Crosse "Grange," United States "Combat," Beacon Falls "Buddy," and Converse "Planter" are types of the former, and Mishawaka and the Goodrich leather work shoes of the latter.

Pumps and Bathing Shoes

Pumps and sandals for misses and children are popular types of tennis and promise a wide sale next year. These shoes are made in two kinds, one with a single strap, the other with a double or cross strap.

Firestone-Apsley Rubber Co. has met the new demand for crêpe or pure rubber soles with its patented "RubberibbeD" sole which is made of smoked sheet, cut out and applied by a special process.

Rubber bathing shoes in fancy embossed colors, some with a crêpe effect, are selling well, Hood, United States, and Tyer specializing in them in this country, and Columbus in Canada.

The Need of Standardization

Having called attention to some of the good points of the 1925 line, a little constructive criticism is in order. The charge is that the rubber tennis footwear manufacturers have not yet learned the lesson of standardization. They have put their eggs in too many baskets, with the result that there cannot be very many eggs in any one of them. This came about after the war when the tennis line of rubber manufacturers was fairly well standardized. It began at the top with the blucher, lace-to-toe basketball shoe, which was just beginning to be marketed extensively, carried a first quality, real leather trimmed bal, loose-lined, with a good quality rubber sole for men, boys, and youths, a medium-priced loose-lined and a cheap third-grade sneaker which had a doubled upper backed with drill, made bal and oxford with no trimming, in white, brown, and black. Add a pump or two and you had the entire line, which brought tremendous volume on the cheap shoes and good volume on the high-priced shoes, because it was concentrated.

Then came the slump and with it the tumble in leather shoe prices, which had a great deal farther to fall than tennis prices. The high-priced leather trimmed quality tennis lost its volume market, so that the rubber shoe manufacturers took their third grade plain sneaker and proceeded to doll it up to look like it. The outside duck was left natural color instead of bleached, trimmings and ankle patches were added made of rubber instead of leather in two or three colors. The blucher type was introduced along with the bal and oxford.

Now this type of shoe did not take the place of the high priced shoe nor the plain sneaker, both varieties still being carried. In a similar manner the old loose-lined, medium-priced tennis was put out with rubber trimmings and unbleached duck. This year the situation has been made worse by further diversification. A still cheaper or fourth grade sneaker has been added, a cheap lightweight sheeting being substituted for the drill backing, and a trimmed and untrimmed shoe put out, making two grades of plain sneakers, two grades of cheap trimmed tennis, and the middle priced line branched out into a legion of varieties. Thus the retailer in looking over the 1925 line finds somewhat over 40 kinds of shoes ranging in price from $0.67 to $3.00. Perhaps he is in a measure responsible, for it looks as though the rubber manufacturers have given him a list on which he cannot offer any excuse on price, quality, or variety, for not buying.

Small, medium-sized and large companies offend alike. A good example of the opposite tendency is found in a small company, the Cambridge Rubber Co., which concentrated on a crêpe sole moccasin type of tennis last year and sold a large volume of them. In fact the moccasin type of shoe is rapidly coming in on all kinds of rubber footwear.

Analysis of the latest lists of eight rubber companies shows a wide variation in the number of types offered, from 9 the smallest, to 41, the largest. This refers to styles only and does not take into account the sizes and half sizes as well as types, from men's to children's, that must be carried.

Of course, the crêpe sole has added to the variety a great deal, but it has become well established by now, and many of these shoes with the old type of calendered sole could well be abandoned. The manufacturers should get together for their own good and weed out some of this deadwood.

The United States Chamber of Commerce reports the case of one leather shoe manufacturer who reduced his styles from 2,500 to 100, which enabled him to cut his prices 35 per cent, reduce his investment in stock on hand by 25 per cent, and double his sales. Can rubber footwear manufacturers long ignore these lessons? A Mr. Hoover is needed to give the 1925 tennis line a good pruning.

SOME OF THE LEADING IMPORTERS DURING THE MONTH OF JUNE of American-made rubber hose were the following: British South Africa, taking goods valued at $21,820; Mexico, $15,943; Panama, $15,908; Japan, $14,092; Cuba, $11,992; Argentina, $10,895; England, $10,644; and Canada, $10,471. The most important shipments in July went to: Mexico, $28,409; Canada, $16,146; Cuba, $14,109; British South Africa, $12,876; England, $8,510; and Argentina, $8,057.

Special Machines for Making and Testing Golf Balls

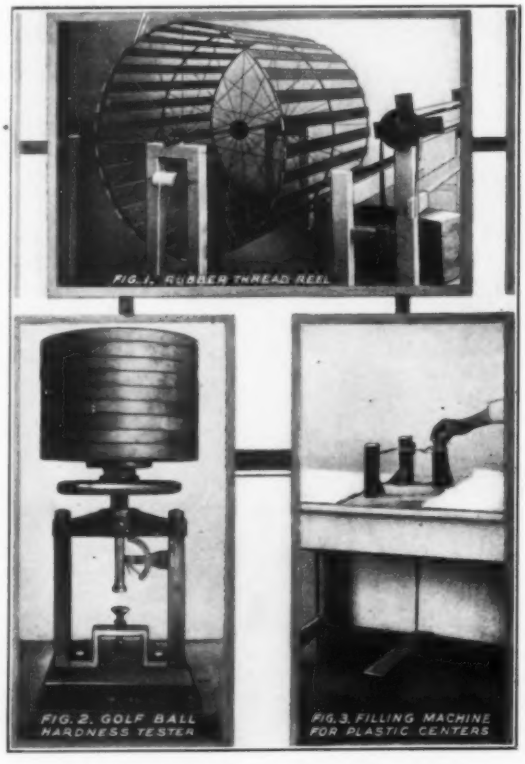
Rubber Thread Spreading and Ruling Device—Ball Compression Tester—Appliance for Filling Plastic Cores

By H. M. Platt

PRELIMINARY to winding rubber thread for the hard centers of a golf ball it is essential to transfer the thread from hanks to bobbins. This operation is very successfully accomplished by means of the simple spreading and reeling device shown in Figure 1. The rubber thread, or narrow strip rubber, is first wound from the hank or skein onto the small reel shown at the right of the illustration. The strands are then separated and spread by passage through a comb fastened to the supporting frame and pass on to be wound up in spaced relation on the larger reel. The speed of unwinding from the small reel is regulated by a weighted band brake. From the large reel the rubber strands are rewound onto bobbins ready for use in the ball center winding machine.

Ball and Center Compression Tester

The hardness of a golf ball is measured by means of the simple testing machine illustrated in Figure 2. The tester comprises a yoke spanning two uprights attached to an iron base. Through the yoke passes a vertical compression rod on the top of which is a platen supporting a series of weights. By means of the hand wheel between yoke and platen these weights can be raised or lowered. In contact with the vertically moving rod bearing the weights, is an index and graduated quadrant for indicating the hardness of the ball under test. The ball is held in a cup-like support adjustable upward by a thumb nut. In making a test the ball in the holder is adjusted to make contact with the spindle above it. Movement of the hand wheel lowers the test weight upon the ball. The hardness or compressibility of the ball is indicated on the graduated quadrant by the index finger.



Machines Used in Golf Ball Manufacture

Elastic Sack Stretcher

Plastic core golf balls consist of elastic sacks filled with some plastic composition. This detail is generally accomplished by injecting the plastic through the neck of the sack by means of a forcing device, after the manner of a grease gun, afterwards tying the neck of the sack with cord or rubber thread. The labor required and the loss from defective balls due to air pockets resulting from imperfect filling and side lumps due to tying the neck make this method of filling plastic cores very unsatisfactory. The simple foot power device illustrated in Figure 3 obviates these difficulties and turns out perfectly filled smooth plastic cores. The operation of the machine is as follows:

Four small prongs of metal are inserted in the neck of the sack. Pressure on the pedal, communicated by means of a cord running over pulleys on the uprights, separates the prongs and stretches open the neck to full size of the elastic sack. After insertion of the measured quantity of plastic material the neck of the sack is cut off, and in its turn the filled sack is placed in a second sack stretched open by the machine, care being taken to place the neck of the inner sack facing opposite the opening of the second or outer sack, thus retaining the plastic without tying and allowing the neck of the outer sack to be cut off, leaving the finished core free of a lump.

The first two of these machines are well known equipment for golf ball making. The sack stretcher is a special device used very successfully to perfect plastic cores at less cost than by any previous method. Together the three machines are an essential equipment in modern golf ball production.

RUBBER ROLLS IN DYE WORKS AND BLEACHERIES

Rubber-covered rolls are indispensable in dye works and bleacheries for saturating or impregnating goods with caustic, and have been regularly used for years in all mercerizing equipment. Such rolls give long service and contribute to cleanliness in the process.

For machines of the rope or strand type the bottom roll is 14 to 16 inches diameter by 72-inch face, covered with hard rubber about a half inch thick. The top roll is generally 12 inches diameter covered with ¾-inch medium density rubber.

In open width saturating machines hard and soft rubber is used in the same way. The rolls are made of the same diameter varying from 10 to 14 inches. Rolls of this type are made with heavy wrought iron pipe bodies and are used on a large percentage of the new saturating machines that have been built in recent years.

AVERAGE PRICE OF TIRES AND TUBES

The National Industrial Conference Board, 247 Park avenue, New York, N. Y., has been making a special study of price levels throughout the years 1914, 1919, 1921, and as data become available, for 1923 also. The decrease in the average price of pneumatic tires and inner tubes for motor vehicles, which in terms of value constitute 55 per cent of the entire industry, is very striking, considering the marked increase in compounding materials and rubber over the levels prevailing in 1914. Automobile and truck casings declined from $13.175 in 1914 to $10.083 in 1923, and inner tubes from $2.542 to $1.311 in the same period. This shows that motorists are obtaining tire service at less cost than ten years ago.

Tire Costs for Highway Transportation

Comparative Cost of Tires for Trucks, Motor Buses and Passenger Cars—Cost of Operation

THE official publication of the Iowa State College of Agriculture and Mechanic Arts of July 9, 1924, contains an article by T. R. Agg, highway engineer of the Iowa Engineering Experiment Station, and H. S. Carter, instructor in civil engineering of the Iowa State College, in which are presented the results of an investigation of highway transportation costs conducted by the Iowa Engineering Experiment Station in cooperation with the United States Bureau of Public Roads and the Iowa Highway Commission. The figures obtained are the outgrowth of a rather prolonged study of the various factors affecting vehicle operating cost, such as rolling resistance and the relation between road types, fuel consumption and general operating costs of vehicles. The findings regarding tire costs on motor trucks and passenger cars, both solid and pneumatic, under various conditions of road and load, and their percentage of total operating cost in each instance, as shown by the following tables, are of much interest.

COMPARATIVE MOTOR TRUCK TIRE COSTS

(Cents per mile and per ton mile, with percentages)

Vehicle and Tire Equipment	Streets and Roads	Number of Cars	Costs: Per Mile	Costs: Per Ton Mile	Costs: Per Cent of Total Operating Cost
5-TON, SOLID TIRES					
Gross weight,[1] 7.5 tons	Paved streets	1	$4.47	$0.60	8.3
Gross weight, 7.5 tons	All sorts	127	5.65	.75	8.8
Gross weight, 7.5 tons	All sorts	1	6.00	.80	10.5
Gross weight, 7.5 tons	All sorts	1	7.50	1.00	12.0
5-TON SOLID-DUAL REAR TIRES					
Gross weight, 7.5 tons	All sorts	1	4.07	.54	9.9
3.5-TON, SOLID TIRES					
Gross weight, 5.75 tons	Paved roads	1	4.51	.78	15.2
3.5-TON, SOLID-DUAL REAR TIRES					
Gross weight, 5.75 tons	All sorts	1	3.05	.53	9.4
3.5-TON, SOLID TIRES					
Gross weight, 5.5 tons	Paved streets	5	2.88	.52	12.2
SOLID TIRES					
Gross weight, 5.15 tons	Paved roads	8	1.68	.29	4.2
Gross weight, 5.15 tons	Paved roads	14	3.00	.58	7.7
2.5-TON, SOLID TIRES					
Gross weight, 5 tons	Paved streets	1	2.05	.41	5.2
SOLID TIRES					
Gross weight, 4.9 tons	All sorts	2	3.11	.63	6.6
2-TON, SOLID TIRES					
Gross weight, 4 tons	All sorts	1	2.34	.58	7.6
2-TON PNEUMATIC TIRES					
Gross weight, 4.1 tons	All sorts	1	5.46	1.34	16.7
SOLID AND PNEUMATIC TIRES					
Gross weight, 2.3 tons	Earth roads	831	2.64	1.13	11.1
PNEUMATIC TIRES					
Gross weight, 2 tons	Paved roads	1	1.70	.85	11.8
COMPOSITE TRUCK	..	..	....	.71	9.2

[1]Gross weight equals the weight of the vehicle plus one-half of the rated capacity.

Several outstanding facts are noticeable in the foregoing tabulation. It is seen that paved streets and roads effect a great reduction of tire as of all other operating costs. It is evident that on solid tires, trucks of medium capacity, such as 2½ to 3½-ton trucks, are heavier to operate than either heavier or lighter trucks per mile, per ton and in per cent of total operating cost. The economy of solid-dual equipment is apparent, but the few comparisons between solid and pneumatic tires on motor trucks are inconclusive because of the small number of trucks involved. The instances quoted indicate much better pneumatic service on light than medium weight trucks. Solid and pneumatic tires in combination on light trucks make a fair showing on earth roads.

The tire costs for the composite truck are computed on the assumption that each group is a single vehicle. This assumption causes the composite truck cost per gross ton mile to be below a weighted average cost, because of the preponderance of trucks over two tons capacity. On the basis of this composite truck the approximate average cost of tires represents 9.2 per cent of the total operating cost and 71 per cent of the cost of fuel.

COMPARATIVE MOTOR-BUS TIRE COSTS

(Cents per bus-mile with percentages)

Number of Buses	Costs: Per Mile	Costs: Per Cent of Total Operating Cost
12	5.10	13.8
5	5.50	21.2
3	3.00	11.6
7	1.48	5.8
7	1.82	10.5
..	3.50	15.1
14	1.40	4.8
106	3.06	15.1
17	1.76	7.9
23	1.30	7.2
14	1.72	8.5
Composite bus	2.69	11.2

Perhaps the most noticeable feature of the motor bus figures is their great variance, ranging as they do from a high of 5.5 per mile and 21.2 of the total operating cost to lows of 1.3 cents per mile and 4.8 per cent of the total operating cost. On the basis of the composite bus the approximate average cost of tires represents 11.2 per cent of the total operating cost and 75 per cent of the cost of fuel.

COMPARATIVE PASSENGER CAR TIRE COSTS

(Cents per mile with percentages)

Kind of Car	Number of Cars	Costs: Per Mile	Costs: Per Cent of Total Operating Cost
Ford touring	2	$0.96	13.7
Hup touring	1	1.00	7.6
Studebaker touring	1	.85	9.2
Buick 6 roadster	1	1.20	10.0
Paige roadster	1	1.23	14.5
Ford coupe	1	.55	5.7
Ford sedan	2	.90	9.4
Dodge sedan	1	1.00	8.8
Essex coach	1	1.11	9.5
Composite car	..	.98	9.5

Judging from the foregoing table the cost of pneumatic tires for passenger cars does not vary as greatly as that of tires for trucks and buses. On the basis of the composite car the approximate average cost of tires represents 9.5 per cent of the total operating cost and 60½ per cent of the fuel cost.

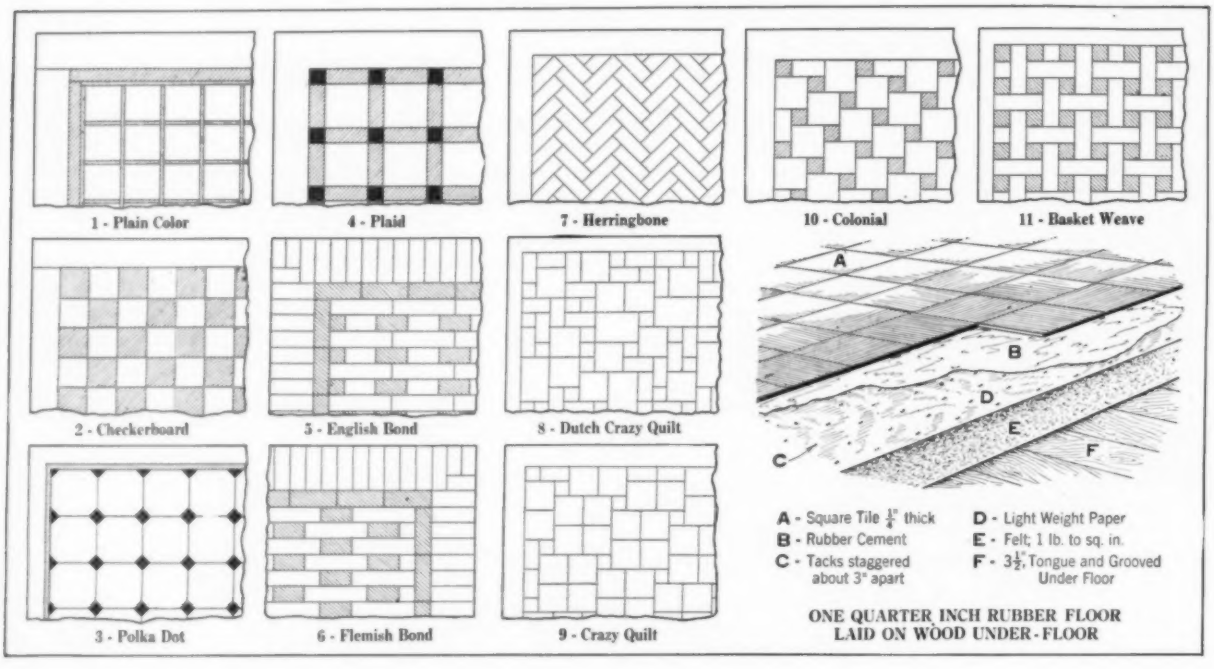
The following estimate of the cost of automobile operation, including the item of tires and tubes, has been used in publicity items of the Wisconsin Good Roads Association:

ESTIMATE OF THE COST OF AUTOMOBILE OPERATION

	Ford Touring	Dodge Touring	Buick Touring	Cadillac Touring
Tires and tubes	$60	$70	$100	$125
Per cent of gasoline cost	110	150	140	140
Total operation cost	$360	$539	$679	$1,056
Cost per vehicle mile in cents.	9.0	13.5	17.0	26.4

CRUDE RUBBER COMMITTEE MEETING

A meeting of the Crude Rubber Committee of the Rubber Division, American Chemical Society, was held in New York, N. Y., October 20, 1924. Dr. W. C. Geer, who has become an active member of the committee, was present, and the discussion was centered around a plan for cooperation between the committee of the Chemical Society and the Crude Rubber Committee of the Rubber Association, of which Dr. Geer is also a member.


1 - Plain Color
4 - Plaid
7 - Herringbone
10 - Colonial
11 - Basket Weave
2 - Checkerboard
5 - English Bond
8 - Dutch Crazy Quilt
3 - Polka Dot
6 - Flemish Bond
9 - Crazy Quilt
A
B
C
D
E
F
A - Square Tile 1/4" thick
B - Rubber Cement
C - Tacks staggered about 3" apart
D - Light Weight Paper
E - Felt; 1 lb. to sq. in.
F - 3 1/2" Tongue and Grooved Under Floor
ONE QUARTER INCH RUBBER FLOOR LAID ON WOOD UNDER-FLOOR

Typical Rubber Floor Designs

Popular Types of Rubber Floor Tiles—Thickness Sizes Commonly Used

By Elmer Swanson

WHILE the design for a rubber floor is usually a matter of individual taste it should by all means be in harmony with the decoration color schemes of the room in which the floor is installed. There are many types and a great variety of color combinations now available. However, the designs here illustrated and described are most popular in the trade at the present time.

Popular Floor Designs

Design 1 is a plain color type with the feature joint in and around the field, having a two-member border strip and a border of about the same width as the tile. If the tile is plain or mottled it can be laid diagonally with a very pleasing effect. The feature joints always come in plain colors.

The checkerboard design 2 has no joints and is provided with a plain border. This is the least expensive design to install and it also requires much less time for cutting.

Design 3 is the polka dot type, with a small square insert in each corner of the tile in the field and a border strip around the field. This design can be laid diagonally by cutting the large tile at forty-five degrees and the small tile in half, on the square. A design of this character is mostly used for dining rooms, halls, reception rooms, lobbies of hotels, or in any space where large tile is required.

The plaid design 4 is sometimes used in connection with feature joints. The color scheme requires three different colors, the large square tile of a light color, the oblong tile of a medium color, and the small tile of a darker shade. This type can be laid diagonally by cutting the large and small squares on the 45-degree angle.

The English bond design shown at 5 should always be used with feature joints. It has a brick effect and is generally used for sun porches.

Design 6 is the Flemish bond, which requires feature joints the same as type 5. This design can not be laid diagonally and this also applies to type 5.

The herringbone design shown at 7 is seldom laid square or in rows of alternating color. This type always requires feature joints which can all be cut to the same length.

Design 8 is the Dutch or random crazy quilt design, being the hardest type of rubber floor to install and cut, requiring four or five different shades of color. The mechanic installing this design must use good judgment in the selection of colors, else the beauty of the floor will be seriously impaired.

The plain crazy quilt design, 9, is in plain color with or without feature joints, and has a border around it of a different color. Designs 8 or 9 can not be laid diagonally.

Design 10 is the colonial square type. This is the only rubber floor that is laid square at the same time giving the effect of being laid diagonally, the large squares being a different color than the small tile. It can be laid with or without feature joints, and the feature joints can all be cut the same length. This design can not be placed diagonally.

The basket weave design shown at 11 has a two-color scheme, and if feature joints are used they can be cut to one length. This type will give a pleasing effect if laid diagonally, by cutting the small tile at 45 degrees and the oblong tile in half accordingly. Mottling can be used in all the above designs with the exception of types 8 and 9. Designs 1, 2, 3, 4, and 11 are the most popular types of the present day.

Triple joint designs can be installed with the type of floors used in 1 and 2, having two different colored joints. The border can be made of from one to four members and also in fancy designs.

From these eleven different designs a multitude of other color effects can be developed to suit the decorations of the rooms in which they are installed.

Thickness of Rubber Flooring

The most commonly used rubber floor is ¼-inch thick. The 3/16-inch is used to a fair extent also but it has a tendency to follow the small hollows too much, requiring a perfectly even underfloor. The ⅛-inch has been used but this does not lie smoothly. It is difficult to cut straight either by machine or by hand as it stretches under the pressure of the knife, causing it to cut out of square. If the least bit of pressure is used a blister or overlapping is bound to occur on tile ⅛-inch thick. The ⅜-inch thickness is generally used in interlocking tile but it has a tendency to be too stiff if used on 9-inch squares or larger, as it requires a great deal of rolling and is hard to sell on account of the higher price.

Automobile Fan Belts

Number and Value of Fan Belt Requirements in 1923—Service Conditions—Rubber and Impregnated Belts—Molded V, Cord and Flat Ply Constructions

THE popular automobiles are credited with having required in 1923 22,500,000 feet of fan belting as original equipment, costing the car owners, at an average of 20 cents a foot, $4,500,000. This figure is for original equipment and does not cover the 1923 expense for fan belt renewals, which may be set at half as much more. The total of the 1923 fan belt business was probably not far from $5,000,000, most of which business accrued to the rubber industry and the balance to the leather industry. Fan belts are only a minor item in the annual rubber bill of the automobilist, the grand total of which has been estimated at $1,161,000,000[1].

On high grade cars and trucks laminated leather fan belts are largely used. These are longer and more expensive than those of rubber or impregnated woven fabric and cost the automobilist $5.00 or more each.

Service Conditions

The value of a fan belt to a car or truck owner is indicated by its cost per mile operated. The service conditions under which automobile fan belts perform their duty compare in severity with those met with in the case of railway axle belts for car lighting. In each car the belt is required to run taut at high speed while exposed to changes of temperature, moisture, oil soakage and the presence of grit drawn up in abundance from the road surface.

To meet these conditions fan belt manufacturers generally consider it necessary to construct their belts so that in service they will run smoothly without overstrain or wear on the bearings and without slip or stretch. Many car manufacturers depend upon the fan belt for power to operate generators, magnetos and water and oil pumps. In such cases faulty belts cause double trouble.

Rubber Fan Belts

Of the several methods of fan belt construction the most popular one is that used for making Ford car belts. Such belts are four-ply fabric thoroughly frictioned and skimmed with high grade oil-resisting rubber composition. The belts are built endless and cured under tension sufficient to remove all stretch.

Molded Cord Belts

The use of V-type and grooved pulleys by car manufacturers has grown rapidly and occasioned the development of individually molded endless belts, unstretchable and capable of withstanding hard service. A special section belt of this type is built of highest grade endless cords impregnated with the best quality rubber friction, the same as incorporated in cord automobile tires. The core is wrapped in bias cut square woven duck with an extra thick cover of special oil and grease-resisting rubber composition. The shape and construction of this belt are such as to insure maximum contact efficiency and long service, free from slipping, stretching or breaking trouble.

A molded V belt also has a cord center, rubber covered with extra rubber on the pulley side molded to conform to the V groove of the pulley. This construction is exceptionally flexible, provides ample strength and resistance to stretch, gives good mileage and needs practically no attention after proper installation.

Elastic Fan Belt

The effort of most makers of fan belts is to make them inextensible. This is a feature difficult to maintain in service where the conditions are exacting. One type of fan belt is designed on the theory that satisfactory fan belt service can best be secured by a belt that will stretch and retract to its original length every time the car is speeded or slowed down. This automatically adjusting feature is secured by molding in endless form a flat core construction of elastic rubber with endless rubber-insulated cords of long fiber cotton. Layers of resilient rubber are interposed at every point between the individual cords, the core and fabric cover. All parts are vulcanized in place and the arrangement of the various parts eliminates the possibility of the cords cutting one another. The elastic quality of this construction allows automatic adjustment of the fan under suddenly applied stresses and thus eliminates slippage.

Impregnated Fabric Belts

Flat woven endless fan belts are made in sizes exact to car manufacturers' specifications in a range of over two dozen sizes. A popular belt of this type is woven from long fiber cotton without splice and exact even width and thickness. Consequently, it cannot separate nor fray at the edges. It contains no rubber but is proofed against water and oil by a special compound that does not evaporate.

Another flat fan belt construction of the impregnated type is of built up multiple plies of the best quality long staple square woven cotton fabric. The several plies, after being thoroughly impregnated with a rubber compound of the highest heat and oil resisting qualities, are vulcanized into a compact unit on cylindrical drums of specific diameters according to the lengths of belt required.

[1] THE INDIA RUBBER WORLD, April 1, 1924, 458.

EXECUTIVE PREDICTS AMERICAN BUSINESS RECOVERY

In a recent statement made to the Ohio Chamber of Commerce, Columbus, Ohio, Frank B. McMillin, president of that organization and vice-president and general manager of The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, expressed his belief in the coming definite recovery of United States industries. Basing his belief on statistical evidence and on the improvement shown in many lines of business, Mr. McMillin considered that, with the reparations problem approaching a solution, there would be a better outlook not only for America but for the entire world. "It is the almost universal comment," said Mr. McMillin, "that we are headed in the right direction for the first time in our recent post-war experience." Although there are many difficulties yet to be faced, Mr. McMillin believed that better times are approaching and that they would be hastened by a return to conservatism in dress, in speech, in politics, in morals, and in religion.

First Radio World's Fair

Successful Exhibit of Radio Apparatus and Accessories—Rubber Panels, Dials, Knobs and Sockets—Hard Rubber Radio Horns—Soft Rubber Specialties—All-Rubber Batteries

THE First Radio World's Fair was held in Madison Square Garden and the 69th Regiment Armory, New York, N. Y., September 22 to 28, 1924.

The exhibitors numbered 179, representing all the important American manufacturers of receiving sets, parts, accessories, and supplies. Foreign representative manufacturers exhibiting included English, French, Italian, Japanese, Swiss, and German. The radio press was fully represented by leading New York dailies as well as by the periodical publications devoted exclusively to radio. The popularity of radio was well attested by the record of attendance, which reached the capacity of the exhibition's halls every evening during the show week. It is estimated that fully 250,000 persons viewed the exhibits in that time.

A special feature of the fair was the display of multiple-tube receiving sets displayed in cabinets of finest design and workmanship. The loud speaker is an essential part of a modern receiving set. The well-known horn is molded in various noiseless compositions of fiber, pyroxylin, and hard rubber, rather than wood or metal.

While the exhibits of hard rubber radio parts were few they were important as indicating their adaptability to radio and battery insulating purposes. The most impressive display of hard rubber specialties for receiving sets was that of the Radion products.

THE AMERICAN HARD RUBBER CO., NEW YORK, N. Y. Panels of Mahoganite and black Radion were the feature of this company's exhibit. These goods possess a remarkably beautiful satin-like finish that enhances the appearance of any set. Being very easily workable with hand or power tools, they show tests that demonstrate the supremacy of Radion hard rubber in the five most important characteristics required of an insulating material, namely, low angle phase difference, low dielectric constant, high resistivity, lowest absorption of moisture and lowest power factor loss.

These electrical properties have been authoritatively determined for Radion as follows: angle phase difference 0.5 to 0.6; dielectric constant 3.9; resistivity (megohms-cm) 1.0 x 10^6; absorption of moisture, in air, 0.005 to 0.02 per cent, in water, 0.08 to 0.11 per cent; power factor loss 0.875 to 1.05 per cent.

Other hard rubber parts exhibited by this company included graduated dials in various diameters; knobs for condensers and rheostats; improved V-T sockets for detector and amplifier tubes; aerial insulators, and rotors of standard size to fit Radion tubing.

THE MILLER RUBBER CO., OF NEW YORK, AKRON, OHIO. The only item of radio apparatus detail was the Miller horn for loud speakers. This horn is made in pebble finish, of black cellular hard rubber in several sizes of two types, as well as any reasonable sizes according to manufacturers' specifications. The hard pebbled outer surface of these horns reflects sound perfectly without absorption, while the internal structure of dead cellular rubber eliminates excessive resonance.

MAY RUBBER CO., NEW YORK, N. Y. This company exhibited a number of devices in molded soft rubber, one of which was an acid-proof tray for protection against battery acid. The tray is resilient and flexible, thus avoiding damage to floors or fine furniture. Two forms of rubber radiophone ear cushions were shown, one a non-blooming ventilated pattern, cool and comfortable to wear, and the other made of sponge rubber. These also are non-blooming and entirely eliminate external noises and cushion softly against the ears.

Double and single phone adapters were also included in the exhibit. The double adapter is a two-branched casting with rubber cups and bushing attached. The soft pure gum cups stretch over any standard headset ear-piece and the bushing fits any phonograph, thereby converting it into a loud speaker.

WILLARD STORAGE BATTERY CO., CLEVELAND, OHIO. The Willard all-rubber radio A battery exhibited contains no wood in its construction. The case is molded in a unit, under pressure of several tons per square inch, so that all joints are eliminated. All partitions between cells are molded integral with the container.

The plates of these batteries are charged by special process before shipping, which enables them to hold the charge indefinitely without deterioration. To prepare them for use it is only necessary to remove the seals and pour in the electrolyte solution and connect them for service. With Willard batteries were also shown rubber battery mats.

While hard rubber and molded phenolic resin products are in competition in radio work, it was notable that in certain of the highest quality sets hard rubber is preferred for the panels and special parts such as telephone ear-cap pieces.

For example, this is true of the telephone head sets of Brandes, Baldwin, and some others, because the satisfactory electrical, mechanical, and wearing qualities of hard rubber fully offset differences in cost.

STATEMENT OF THE INDIA RUBBER WORLD

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for October 1, 1924.

State of New York, } ss.:
County of New York }

Before me, a notary public in and for the State and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of THE INDIA RUBBER WORLD, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, The India Rubber Publishing Co., 25 West Forty-fifth Street, New York City.

Editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Managing Editor, Henry C. Pearson, 25 West Forty-fifth Street, New York City.

Business Manager, E. M. Hoag, 25 West Forty-fifth Street, New York City.

2. That the owners are: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

The India Rubber Publishing Co., 25 West Forty-fifth Street, New York City.

Henry C. Pearson, 25 West Forty-fifth Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. Hoag, Business Manager.

Sworn to and subscribed before me this 19th day of September, 1924.

[SEAL] HARRY HOAG, Notary Public.

(My commission expires March 30, 1925.)

Certificate filed in New York Co., No. 537.

New York Co., Register's No. 5064.

Hevea Planting in the Congo

Plantation Methods—Tapping Yields—Production Statistics—Comparison With Far Eastern Plantations

THE rubber plantations of the Belgian Congo, as in other rubber producing countries, were started about a quarter of a century ago, when the demands of industry began to make serious inroads on the world reserves of wild rubber.

Trials were made with many varieties, but the only one that gave promising results was the *Hevea brasiliensis*. Today the only Pará rubber grown in the Congo comes from old-established plantations, whose managers have made a life study of Hevea culture under local conditions.

It has now been demonstrated that the climate and soil of the Congo are well suited to Hevea culture. Favored by heavy and abundant rains, Congo Heveas grow quickly, both in height and circumference. They can be easily transplanted, adapting themselves to the new soil very quickly, and the resultant latex is of good quality.

Plantation Methods

Congo rubber planters have found by hard experience that the clearing of the forest must be very thorough, otherwise parasite growths settle on the dead wood and cause terrible havoc among the plantations. Planting usually consists in first sowing fresh seeds from good yielding trees at least ten years old, in shady positions, the seeds being only lightly covered with soil. An interval of six or eight inches is left between sowings. Young plants are transplanted when their trunks become finger thick—from 9 to 14 months after sowing.

Spacing between adult plants has been found most advisable at about seven meters between the rows and three meters between the plants,—especially in plantations where coffee is grown simultaneously with rubber. There is generally necessary a further thinning out of the weak growths, bringing the between-tree space to four, five or even six meters, the ultimate object being to conserve about 225 fertile Heveas to every hectare (2½ acres) of plantation. The results of this plan have been quite satisfactory.

Congo Hevea Planted in 1899, Tapped Both Sides

Tapping and Yield

Tapping every other day is usually started when the tree is five or six years old. Rainfall in the Congo is less abundant than in Malaya and the yield is therefore lower. On the other hand, both land and labor are cheap, so that rubber plantations are usually very remunerative. Yield runs on the following averages at the ages named: At 5 years, 100 kilos per hectare; at 6, 150; at 7, 175; at 8, 200; at 9, 225; at 10, 250; at 11, 275; and at 12, 300.

Rubber preparation comprises straining and coagulation of latex, washing, drying, sometimes smoking, and finally packing and shipment, the same as in the rubber producing countries of the East. Fumigation by means of stoves burning charcoal, leaves, etc., is being gradually abandoned in the Congo drying rooms.

Extent of Cultures

The government experimental plantation at Yangambi-Gazi now comprises about 500 hectares (about 1,250 acres), while the plantations of various companies cover an area of some 3,000 hectares (about 7,500 acres). Detailed statistics of acreage, yield, crop and costs are presented in the accompanying tables.

Transport to Matadi, the shipping port, works out at 30 centimes per kilo; and although freights to Antwerp are rather heavy, Congo plantation rubber, generally of good quality, often brings the same prices as Malay rubber.

Many planters find it profitable to ship both rubber and coffee together. For this reason the "double crop" system is extending

CLASSIFICATION OF 1921 CROP—31,982.5 KILOS

	Yangambi, Kilos	Gazi, Kilos
First latex	17,063.5	11,381.
Skimmings and washings	781.	....
Lumps	853.	833.5
Scraps	1,130.5	....
Totals	19,768.	12,214.5
Per hectare	110.7	112.7

DETAILS OF PRODUCTION EXPENSES

	Yangambi		Gazi	
	Total Francs	Per Kilo Francs	Total Francs	Per Kilo Francs
Maintenance	6,882.93	0.35	7,319.31	0.60
Tapping	13,554.40	0.68	11,830.11	0.96
Manipulation and fumigation	10,377.89	0.52	7,499.88	0.615
Packing and transport	2,943.28	0.15	1,872.94	0.155
Other expenses	.....	1.26	.....	1.49
Total production cost	24,833.37	2.96	18,171.14	3.82

HEVEA GOVERNMENT PLANTATIONS

	Yangambi		Gazi	
	Hectares	Trees	Hectares	Trees
Planted in 1911	43	9,067	20.3210	4,105
1912	4	840	18.6000	4,499
1913	128	27,916	109.7790	21,461
Previous plantings	3.55	1,743	.....	.....
Planted in 1921	4	1,900	.....	.....
Totals	182.55	41,466	148.7000	30,065

HEVEA PLANTATION RETURNS—1921

	Hectares Tapped	Tappers	Trees Tapped Alternate Days	Trees Per Day Per Man	Total	Per Day Per Man	Per Hectare and Per Month
Yangambi	178.55	50.8	30.200	300.8	2,322.4	1.81	12.96
Gazi	.....	....	.....	.....	.....	1.915	13.43

rapidly. The Robusta coffee plants are set between the rubber rows and start yielding from the third year. This gives a quicker crop than the Hevea alone and plantation productivity is appreciably increased. Plantation rubber is always dried thoroughly before packing, which is done in cases made at the Congo factory.

Export Formalities

All rubber is officially examined prior to export, and adulterated and impure rubber is rejected. Adulterated rubber comprises the product "containing any foreign matter fraudulently introduced into the rubber during or after manufacture," while the official definition of "impure" rubber covers rubber "containing water, insufficiently coagulated latex, resinification known as stickage, and vegetable residue in a proportion of more than 15 per cent of the total weight."

Comparison with East Indies

The yields of 110.7 (Yangambi) and 112.7 (Gazi) kilos per hectare are admittedly somewhat less than half of the corresponding output of the best plantations in Malaya. The Director of the Congo Government plantations attributes this unfavorable result to the following main causes: (1) System of tapping. (2) The severe drought of 1921. (3) Damage caused by tornadoes. (4) the initial planting of Heveas at a spacing of 7 by 7 meters, which did not allow of proper selective thinning-out. (5) The use of insufficiently selected seed when the plantation was first established. An appreciable difference was observed in the yield from different growths, corresponding to the difference in the seeds originally planted.

With respect to price comparison, it is interesting to note that the costs of production in Malaya, calculated on the same basis but in Dutch currency (florins), were 1.060 and 1.610 florins for medium and good plantations, respectively. Selling prices of Congo rubber are approximately the same as those of the Malayan growths.

Several company plantations in the central forest section of the Congo give results closely resembling those of the government plantations. The present total export of plantation rubber from the Congo is about 200 tons per annum, with a distinct tendency to increase. Official reports state that land available for rubber culture is practically unlimited and that native labor is cheap but far less capable than that available in Malaya and Brazil.

Rubber Latex Particles

An important experimental study on rubber latex particles by Dr. Ernest A. Hauser, of Vienna, reveals some very interesting facts concerning the particles of rubber and gutta percha in the latex[1].

Concerning the rubber in Hevea latex the author states that some scientists believe the shape of the single Hevea rubber particle to be spherical or globular in shape and a few think it has a pear shape. Others consider that the rubber making up the particles is a solid mass, whereas others think it is in a liquid state.

Carrying out investigations on ammonia preserved latex, Dr. Hauser found experimental microscopical means to prove the shape and physical condition of the single rubber particle.

Staining Rubber Latex

Hitherto it has been very difficult to stain rubber latex for microscopical experiments, as only neutral or alkaline stains could be used due to acid coagulation. A stain called emerald blue was finally found excellent for the purpose. This is a gelatine aniline dye stuff compound and therefore embodies by evaporation the rubber particles in a gelatinous colored substance.

Particle Shape

By an attachment to the ultra-microscope, known as an "azimuth stop," it is possible to determine if the shape of an ultra-microscopical particle is spherical or not. Using fresh latex it was proved that Hevea latex practically does not contain any spherical particles, but that their shape varies from egg to pear shape, as represented in Figure 1. Shapes 1 and 2 are most common in new branches, leaf stems and leaves; 4, 5 and 6 are most common in normal tapping areas, and 7 is found only in old trees or after certain treatment of the latex.

Particle Structure

To investigate if rubber contained in latex is in solid condition or not a special method of micro-dissection was used. This consists of utilizing one or more glass needles attached to posts fixed to the side of the microscope, which, by means of very fine adjusting screws, can be directed against single cells at minute distance and prick or cut them or extract the kernel or a living cell out of the plasma, etc.

This method, employed to its utmost possible fineness and with training and skill, made possible micro-dissection in the study of rubber latices dealing with particles not exceeding 3/25,000 of an

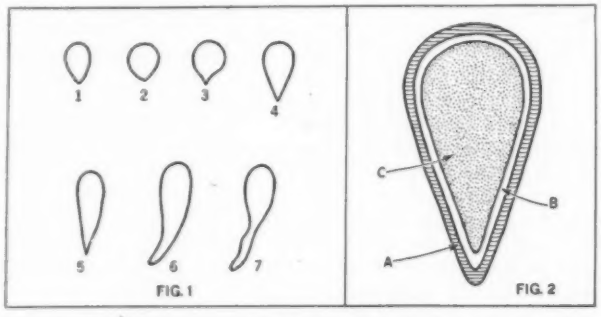


Fig. 1—Hevea Braziliensis Rubber Particle Shapes. Fig. 2—Hevea Braziliensis Rubber Particle Structure

inch and averaging 1.5/25,000 of an inch. By this micro-manipulator it was proved that the rubber contained in Hevea latex is in a semi-liquid state: which means that it consists of a highly viscous fluid easily deformable.

It was proved, also, that a single rubber particle is surrounded by a protective layer of non-rubber constituents A as indicated in Figure 2, and that the particle itself consists of two distinctly different kinds of rubber, B and C in the same figure. The layer B, next under the protective coating, is difficultly soluble in benzene and is high viscosity rubber. The main body of the particle, C, is benzene soluble low viscosity rubber.

Rubber Quality

The well known fact that Hevea rubber is superior to all others seems to have some bearing on its natural state in the latex, as could be proved by using the methods and instruments referred to and investigating the latices of various rubber trees and those yielding like substances. Thus the latex of *Ficus elastica*, Rambong rubber, consists of spherical particles which are absolutely liquid and may therefore be called a true emulsion. Also the particles of gutta percha, *Taban merah*, consists of practically solid substance, whereas Ceara, rubber, contained in *Manihot glaziovii* is very viscous and exists in the shape of sticks.

[1] *India-Rubber Journal*, July 5, 1924, 19-21.

What the Rubber Chemists Are Doing

Influence of Accelerators on Plasticity of Uncured Rubber Stocks[1]

By Stanley Krall[2]

THE tendency of raw rubber stocks to set-up or scorch during processing has been determined in the laboratory by means of plasticity measurements, using the following method:

Procedure

A pellet of 2-cc. volume is placed in the press at a fixed temperature, and readings are taken at stated intervals, preferably 5-minute intervals, up to 30 minutes. These readings follow the true plasticity curve ($K = YX^{0.198}$) until setting-up begins. When this occurs, the curve deviates from the normal and quickly approaches a parallel to the time axis. The true plasticity value, K, from the first portion of the curve, being known, the deviation or increase in K may be expressed as percentage increase at any time interval. The percentage increase in K is plotted against the time of heating to obtain a setting-up curve for the stock. The true plasticity value is attained after 5 to 10 minutes of heating, but in instances where the stock starts to set-up almost immediately upon placing in the press, the 5-minute plasticity value is taken as the normal value, although in such cases it may be slightly high.

The method measures change in plasticity, and therefore cannot be employed after the plasticity curve becomes flat or parallel to the time axis. The test should be completed within 30 minutes, as the actual decrease in thickness after that time is generally so small that the experimental error becomes too large for satisfactory results. This is especially true when the stock shows appreciable tendency to set-up, but is also the case when the sample does not begin to set-up within 30 minutes. It is not advisable to rely on a single reading after the stock begins to set-up, as the experimental error is sufficiently large to give erroneous conclusions. The curves approach straight lines, but they are invariably somewhat irregular, as is apparent from the curves in this paper.

Aside from information on the premature vulcanization occurring at the temperatures developed during factory processing, a knowledge of the plasticity changes which take place at ordinary or slightly elevated temperatures is also quite essential. For such work the original plasticity value, K, is determined and then a portion of the stock is heated, in the absence of air and preferably in a mold, at the desired temperature for any suitable period of time. The plasticity of the treated sample is determined and the increase in K is expressed in percentage.

When a comparison of the absolute plasticity of stocks is required, it is essential that all mixes compared be given uniform treatment during the milling operation. The conditions to be maintained identical are size of batch, distance between rolls, temperature of rolls, and time of milling. Obviously, the stocks compared must be run on the same mill or on mills of the same size, speed, and gear ratio. On the other hand, when information concerning the tendency for premature vulcanization only is desired, it is necessary to maintain only approximately the same conditions, as in this case small variations in the absolute plasticity have no apparent effect.

The concentration of accelerator is an important factor; hence equivalent quantities should be used in all comparisons. Almost without exception, the quantity of accelerator employed in the present work was the amount necessary to produce the maximum modulus or stiffness when the stock was cured for 60 to 75 minutes at 143.3 degrees C. (290 degrees F.). The base formula used was as follows: Smoked sheets, 100; zinc oxide, 3; sulphur, 4.

At 100 degrees C. the influence of the accelerators is in the following order, the one with the greatest effect heading the list and the last three showing no effect: thiocarbanilide, aldehyde-ammonia, diphenyl guanidine, di-o-tolyl guanidine, accelerator A (condensation product of aniline with acetaldehyde and formaldehyde, melting point 73 degrees C.), triphenyl guanidine hexamethylene tetramine, ethylidine aniline (condensation product of aniline with acetaldehyde, melting point 78 degrees C.), and *p*-nitrosodimethylaniline.

At a temperature of 90 degrees C., thiocarbanilide and aldehyde ammonia are the only accelerators of those tested that produce appreciable set-up, when the amounts used are within the range generally employed; quick curing stocks containing a high concentration of accelerator are not included. The influence of the concentration of accelerator varies with the accelerator. The concentration of diphenyl guanidine has appreciable influence, while that of thiocarbanilide or the condensation product of aniline with acetaldehyde and formaldehyde has only a slight effect. The effect of the concentration of sulphur is small, indicating that the concentration of sulphur is much less important in connection with the factory workability of stocks than either the kind or concentration of accelerator.

Zinc oxide decreases the influence of aldehyde ammonia in producing premature vulcanization. It increases that of diphenyl guanidine slightly and of thiocarbanilide tremendously. Lime and calcined magnesia in the presence of zinc oxide increase the setting-up tendency of stocks containing aldehyde ammonia and diphenyl guanidine. In some cases the actions appear to be simply additive, in others, more than additive.

This method is not adapted to the study of most superaccelerators, because when they begin to set-up, the action is too rapid to permit determining the rate of change.

Sulphur, even up to 12 per cent on the rubber, does not act as a softener of raw rubber, at least so far as can be determined by this method.

[1] Presented under the title "The Influence of Organic Accelerators on the Plasticity of Uncured Rubber Stocks" before the Division of Rubber Chemistry at the 67th Meeting of the American Chemical Society, Washington, D. C., April 21 to 26, 1924.

[2] Firestone Tire & Rubber Co., Akron, Ohio.

Crude Rubber Testing—Rate of Cure[1]

By C. W. Sanderson[2]

Recommended Method

A single cure of 3 hours at 141 degrees C. is run on the sample mixed in the proportion 100 rubber to 10 sulphur. The pieces are tested by any of the usual methods to get the full stress-strain data, so that the full curve may be drawn. Usually four pieces are sufficient, and the results are averaged and one curve is plotted. The slope is then determined in this curve by subtracting the per cent elongation at 386 kg. (850 pounds), which equals 785, from the per cent elongation at 672 kg. (1480 pounds), which equals 870, and dividing by 2.5, the result being 34. (These figures are chosen to compare with those of Schidrowitz.) The distance from the standard point is then determined. For the standard point an elongation of 850 per cent at a load of 840 kg. (1850 pounds) has been taken. (This compares with De Vries' figures of 890 per cent at 1.30 kg., or 1850 pounds per square inch.) The distance

[1] Part of report of the Crude Rubber Committee presented before the Division of Rubber Chemistry at the 67th Meeting of the American Chemical Society, Washington, D. C., April 21 to 26, 1924.

[2] The Fisk Rubber Co., Chicopee Falls, Massachusetts.

of the 3-hour cure from this point is found to be 4.5 units on the per cent elongation scale.

By taking results from a large number of tests, it has been found that a difference of cure of 60 minutes produces a movement of 13.5 units. Therefore, by proportion, since the 3-hour curve is 4.5 units from the standard, the difference of cure necessary to bring this rubber to the standard is 20 minutes. For important tests and for a check it is well to cure another sample at the estimated cure and see how closely it agrees with the standard.

In applying this method it should be borne in mind that the test is suggested simply as a means of determining the time of cure. It should also be recognized that in using this method it is necessary to choose certain arbitrary points, and in these there may be some difference of opinion. For example, curing a rubber to an elongation of 850 per cent at a load of 840 kg. (1850 pounds) represents a technically overcured rubber. The argument for a lower cure is that it will better correspond with technical practice, while the argument for the cure as used in this paper is that the rubber is cured to a state where the full properties are shown to best advantage. Looking at it in this way we are only interested in its properties for test purposes, and its deterioration with age may be determined in a separate test if desired.

When this work was started by the Crude Rubber Committee, it was thought advisable to cure the tests at 141 degrees C. (40 pounds steam pressure), and the foregoing explanation is carried out on that basis. After the first preliminary work, however, it was recognized that there was no essential difference in the character of the curve, whether cured at 141 degrees C. (40 pounds) or 148 degrees C. (50 pounds), and, therefore, in order to save time it was decided to use the 148 degrees C. (50 pounds steam pressure) as a standard for testing practice on this formula.

Another point to be recognized is that the method as outlined is really a short cut and should not be applied unless the principle back of it is understood. No one should start out to use the method without first running test samples at several cures, in order to determine the extent to which the curve is advanced by increased cure. It is well also to secure a sample at the estimated standard to check the determination.

It may be found that for the grades other than first quality rubbers it will be necessary to choose different standards depending on the slopes of the samples. This point is not gone into in detail in this paper, as it can be worked out by any one familiar with the method, and might confuse the explanation of the principles given here.

Chemical Patents

The United States

RUBBER EMULSIONS. This refers in particular to what may be termed rubber emulsions, which are made by mixing 20 per cent bentonite or proper colloidal clay with 80 per cent of crude or reclaimed rubber, or a mixture of both, and also with 60 parts of water. Preferably the water and bentonite will be first mixed and then the rubber added in such form as may be desired. The contents of the receptacle may be heated to 300 to 400 degrees F., and agitated with paddles. Also, a pressure of 50 to 200 pounds may be maintained on the contents of the receptacle. This pressure may be from the steam generated or by the introduction of extraneous gas, as for example, a hydrocarbon gas. The emulsion may be diluted with further addition of water, cooled, drawn off, mixed with fibrous stock, and molded or sheeted on a paper machine.—Lester Kirschbaum, Chicago, Illinois. United States patent No. 1,498,387.

RUBBER COMPOSITION. Old or waste rubber is comminuted under heated conditions, virgin rubber is blended with it to form a plastic mass; to this is added during mastication white lead, castor oil, viscous gum and dissolved resin.—William Stocks, Fitzroy, Victoria, Australia. United States patent No. 1,508,900.

PUNCTURE SEALING COMPOUND. This consists of the following ingredients: powdered cork 8 ounces, powdered mica 8 ounces, soap tree bark 2 ounces, mixture of Epsom salts and common salt 2 ounces, and one gallon of water.—Osro S. Stevens, Waxahachie, Texas, assignor of one half to P. Blanchard & Sons, Palestine, Texas. United States patent No. 1,509,004.

RUBBER PRINTING SURFACES. A process of producing rubber printing surface consists in forming a mold in sheet lead by pressing it against a stereotype or its equivalent, covering the mold so obtained with a thin uniform layer of sodium silicate, placing thereon a sheet of unvulcanized rubber with a paper on the back of the rubber, pressing the rubber into the mold and vulcanizing it.—Etienne Sardou, Fernand Boulle, Segond Mordaci, and Emilien Commenge, Marseille, France. United States patent No. 1,509,112.

VULCANIZATION ACCELERATOR. Producing a sulphur-nitrogen accelerator which consists in admixing methylene-aniline and aniline, heating the mixture, eliminating hydrogen sulphide and aniline.—Clayton W. Bedford, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,510,074.

ADHESIVE. This comprises asphalt, oxidized mineral oil and a suitable rubbery material.—F. W. Farrell, assignor by mesne assignments to McLaurin-Jones Co., both of Brookfield, Massachusetts. United States patent No. 1,510,591.

PROCESS OF VULCANIZING AND THE PRODUCTS. S. M. Cadwell, Leonia, New Jersey, assignor to the Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent No. 1,510,652.

PROCESS OF RECLAIMING RUBBER. The rubber is treated with an aqueous solution of an alkaline devulcanizing agent and with a ketone capable of swelling the rubber, the process being conducted by heating in a closed vessel.—J. H. Russell, Naugatuck, Connecticut, assignor to Rubber Regenerating Co. United States patent No. 1,510,706.

TREATING RUBBER. This comprises milling into rubber a quantity of activated carbon carrying means for accelerating the vulcanization of the rubber.—Ellwood B. Spear, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,511,984.

The Dominion of Canada

RUBBER MANUFACTURE. The process comprises mixing zinc oxide, sulphur and the condensation product of ethylene diamine and heptaldehyde, and vulcanizing the rubber in a mold for 60 minutes under 40 pounds steam pressure.—The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of S. M. Cadwell, Leonia, New Jersey, Canadian patent No. 242,446.

RUBBER VULCANIZING. A process comprising combining 100 parts of rubber, 10 parts of zinc oxide, 3 parts of sulphur and 3 parts of pará chlorthiobenzaldehyde, and vulcanizing at 40 pounds of steam for 30 minutes.—The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of S. M. Cadwell, Leonia, New Jersey. Canadian patent No. 242,447.

RUBBERIZED FABRIC. The method of producing rubberized fabric with a glossy finish, which comprises dusting the rubberized fabric with starch and curing the rubber in part by the action of a vaporous vulcanizing agent and in part by the action of a liquid vulcanizing agent.—The Meade Rubber Sales Co., assignee of James Meade, both of Stoughton, Massachusetts. Canadian patent No. 243,018.

The United Kingdom

WATERPROOF ROAD COMPOSITIONS. A bituminous or tarry base is intimately mixed with rubber which has been treated with a solvent "without the aid of tetrachloroethane." Sulphur or other vulcanizer may be added and the mixture heated to effect partial or complete vulcanization of the rubber.—S. C. Craigmiller, Mount Road, New Brighton, Cheshire. British patent No. 216,602.

RUBBER CONCRETE. By mixing cement with rubber previously precipitated in a fine state of division from latex, a homogeneous mass of improved texture and surface is obtainable. The rubber, not exceeding the proportion necessary to fill the interstices of the cement, from 1 to 5 per cent, is precipitated in the desired form from latex by the addition of alum solution, and is mixed together with sufficient water with the cement. Inert filling materials may also be added. If desired sulphur and a vulcanization accelerator may also be introduced and the blocks vulcanized by heat treatment, preferably between the initial and final stages of setting.—V. Lefebure, 9 Glenloch Road, Hempstead, London. British patent No. 217,279.

FILLING AND DYEING FABRICS. A small proportion of rubber latex is added to filling materials, to which dyes or pigments may also be added. The treated fabric may be exposed to the action of a rubber coagulating agent and the rubber vulcanized.—R. Russell, Heaton Park, Manchester, and H. Broomfield, Stockport, Lancashire. British patent No. 217,973.

RUBBER COMPOUNDING INGREDIENT. Flocculated clay of low acidity for rubber compounding is prepared by deflocculating in known manner and flocculating by the usual reagents; either the flocculated clay is washed with water or an alkaline solution, or the flocculating and deflocculating agents are balanced in amount, or the flocculation is effected in the presence of a colloid such as rosin.—W. Feldenheimer, 20 Holborn Viaduct, London, and W. W. Plowman, 83 St. Leonard's Road, East Sheen, Surrey, British patent No. 218,364.

ACCELERATOR OF VULCANIZATION. This is obtained by combining one molecular proportion of a pará nitroso alkylarylamine with two portions of β naphthol.—British Dyestuffs Corporation, Ltd., V. Lefebure, and A. J. Hailwood, 70 Spring Gardens, Manchester. British patent No. 218,854.

SPONGY RUBBER. Porous rubber is obtained by mixing it with an adsorbent substance, such as silica gel, charged with a gas or a gas generating substance, liberating the gas by raising the temperature or lowering the pressure, or both, and causing the mixture to harden.—V. Lefebure, 9 Glenloch Road, Hampstead, London. British patent No. 218,923.

CRÊPE SOLES. To prevent slipping, reduce porosity and increase the life of crêpe soles they are coated with a solution consisting of 15 parts by weight of gutta percha dissolved in 85 parts of carbon disulphide.—J. Mason, 82 Cornhill, London. British patent No. 219,096.

TREATING RUBBER LATEX. The latices of rubber, gutta percha or balata are converted into paste-like or solid water soluble products by filtration, ultra-filtration or dialysis. Protective colloids with or without substances which impede coagulation are preferably added to the latex before treatment.—K. D. P., Ltd., 7 Gracechurch street, London, assignees of E. Hauser, 7 Marienstrasse, Frankfort-on-Main, Germany. British patent No. 219,277.

TREATING RUBBER LATEX. Rubber latex is concentrated and separated by centrifugal action into two portions, one of which contains a higher proportion of solids and the other a lower proportion than the original latex. Preservatives may be added to the latex.—W. L. Utermark, 25 Okeghemstraat, Amsterdam. British patent No. 219,635.

RUBBER COMPOSITIONS. Finely divided litharge produced by volatilizing and oxidizing lead or lead oxide and precipitating the resulting fumes is used as a filler and accelerator for rubber.—T. Goldschmidt Akt.-Ges., 18 Salkenbergweg, Essen, Germany, British patent No. 220,318.

RUBBER ANTI-OXIDANTS. The oxidation of rubber is retarded by combining with unvulcanized rubber a retarder of oxidation. Certain condensation products of aldehydes and amines, particularly acetaldehyde and aniline, possess the necessary properties. The condensation products may be milled into the rubber mix or introduced into it by absorption from a solution, or produced within it by exposing it in succession to aniline and aldehyde vapors.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignees of S. M. Cadwell, 561 West 58th street, New York, N. Y. British patents Nos. 220,320 and 220,321.

TREATING VULCANIZED LATEX. Aqueous emulsions of vulcanized rubber such as vulcanized latex are atomized into a gaseous drying medium to remove either a part or all of the contained water. The dried product retains its plasticity for some time and can be sheeted, molded or extruded in the same way as crude rubber. Also, it can be compounded or colored.—P. Schidrowitz, 57 Chancery Lane and M. S. Stutchbury, 7 Grace Church Street, both in London. British patent No. 220,341.

RUBBER COMPOSITIONS. Plastic compositions containing rubber latex in an uncoagulated condition are obtained by adding to latex materials which modify a number of the following properties: viscosity, adhesiveness, cohesiveness, plasticity, and surface tension. The compositions are pressed or molded, dried at ordinary or elevated temperatures, and may be vulcanized. Sheets for wall and floor covering are specified. A composition for shaping on a potter's wheel consists of latex, mineral flour, water glass and vulcanizing ingredients. A rubber preparation for glazing this pottery-like composition is specified.—American Rubber Co., 130 Essex street, Boston, Massachusetts, assignees of E. Hopkinson, 1790 Broadway, New York, N. Y. British patent No. 220,591.

ORNAMENTING. A process for producing designs in vulcanized rubber on surfaces of many materials consists in applying a film of rubber and sulphur with or without coloring matter or other ingredients, exposing the film to light through a stencil or negative, whereby parts become vulcanized, and dissolving the unexposed portions of the film by a suitable solvent such as benzene, etc. The image remaining may be further vulcanized by any known process.—B. D. W. Luff, 85 Ashley Terrace, and North British Rubber Co., Ltd. Fountainbridge, both in Edinburgh. British patent No. 219,853.

Germany

Patents Issued, With Dates of Issue

400,525 (December 7, 1922). Method of making rubber paper. Dr. Kurt Pelikan, Stade, Hannover.

401,377 (March 30, 1923). Method of making plastic masses. Paul Hanfland, Flutstrasse 24, Berlin-Niederschöneweide.

402,645 (April 16, 1921). Method of making artificial rubber out of beet-root slices. Dr. Aldo Volpino, Ferrara, Italy. Represented by Cl. Wagener, Berlin S. W. 29.

402,752 (January 25, 1922). Method of making artificial substances, films, solutions, and the like out of acetyl-cellulose. Chemische Fabriken vormals Weiler-ter-Meer, Uerdingen, Niederrhein.

VULCONE

Vulcone is an amorphous resin produced by the condensation of aliphatic aldehydes with aniline. It has a melting range which starts at not less than 80 degrees C. and readily dissolves and disperses at mixing temperatures. Vulcanized rubber goods made with Vulcone are said to have excellent physical properties which are retained even after the stock has been exposed to heat over a long period. It is an uncommonly good hard rubber accelerator and insures high quality of the finished product with low accelerator cost.

GRASSELERATOR 327

Under the trade designation "Grasselerator 327," a new non-poisonous organic accelerator has been introduced to the rubber trade. Its use, application, and action are so closely similar to diphenyl guanidine as to be practically the same, although the material differs chemically from the latter. It is a fine white powder, and does not discolor, and offers the minimum possibility of precuring or overcuring. Its rate of cure doubles between 130 and 140 degrees C. By its use high tensiles and superior aging quality are obtained.

New Machines and Appliances

Centerless Grinder for Hard Rubber

THE centerless grinder is a machine for producing an accurately ground outside surface of contour of revolution with no apparent control of the center of rotation.

The grinder here pictured was first conceived as a single purpose tool, but on account of its extremely high productive features it was found desirable for other work and has been demonstrated on a great variety of jobs, including some in hard rubber working.

The illustration shows the centerless grinding of hard rubber fountain pen barrels which are being formed to the required shape in one cut at the rate of 1,000 pen barrels an hour, ready for finish polishing. This is double the production per man obtained by the grinding equipment formerly employed. The stock used is hard

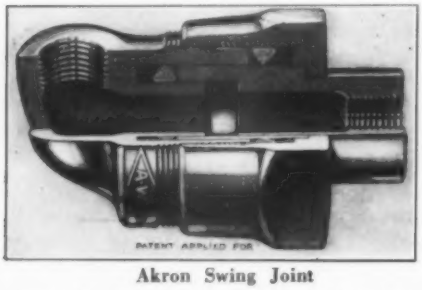
Grinding Hard Rubber Pen Barrels

rubber tubing and the average amount of material removed is 0.025 of an inch.

The grinding wheel is trued to the desired shape by means of special profile truing fixture, and different shapes can be obtained by changing the cam plates. The wheel wear is very slight and the wheel maintains its shape so well that truing once or twice a week is sufficient. A very satisfactory finish is obtained, in fact, so much better than can be obtained by existing methods that subsequent polishing costs are reduced one-half.—The Cincinnati Milling Machine Co., Cincinnati, Ohio.

Flexible Swing Joint

A durable and tight swing joint is greatly appreciated by all rubber press men. One of the latest devices of this sort is here pictured in a partly cut away view to make evident its working parts. The packing is double and entirely protected from contact with steam, insuring long life. The metal parts of the joint are solid steam bronze, carefully machined. The swing movement is free and the continued tightness of the joint is evident from the construction.—The Williams Foundry & Machine Co., Akron, Ohio.

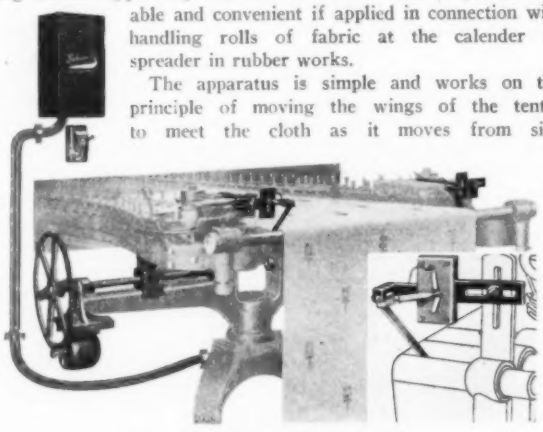


Akron Swing Joint

Automatic Fabric Guide for Calenders and Spreaders

The illustration represents an electrically operated guider used extensively in textile mills for guiding the edges of fabrics while being rolled. Apparently this device would be found equally valuable and convenient if applied in connection with handling rolls of fabric at the calender or spreader in rubber works.

The apparatus is simple and works on the principle of moving the wings of the tenter to meet the cloth as it moves from side



Swartz Electric Fabric Guider

to side or varies in width, instead of moving the cloth to meet the wings. Therefore the wings are kept in constant touch with the selvages, the cloth running perfectly free. The screw by which the wings are moved is cut in the middle, allowing each wing to act independently of the other. Gears are substituted for the hand wheels ordinarily used for setting the wings. The gears are operated by connection with small reversible motors on each side as shown in the illustration. Any variation of the cloth causes the wings to follow the selvages through the action of the motors.—Blake Electric Mfg. Co., 1 Rowes Wharf, Boston, Massachusetts.

Signode System of Packaging

The Signode system of banding is a method of tightly encircling a package with steel bands and securely sealing the overlapping

Bundling Tires with Signodes

ends of each band within a metal sleeve called a "signode." Rivets, buckles, and nails throughout the band are all eliminated.

This system is adapted to a wide variety of uses, one of which is here illustrated as applied to bundling tires for shipment. It is the ideal method of tire bundling on account of its ease of application, neatness and pilfer-proof quality. Signode bands do not

stretch nor slip. They are preferred to rope ties because of the lighter labor and saving on the hands of packers. The work of banding tire bundles is done by means of a simple stretching and sealing device. An operator, with a little experience, can apply 4 bands a minute.—Consolidated Steel Strapping Co., 537 West 35th street, New York, N. Y.

Valve Nut Screwing Machine

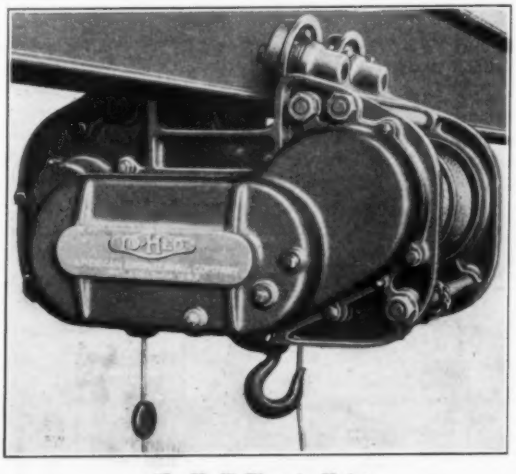
The hand-power bench machine here illustrated is a most convenient device for screwing or unscrewing the valve nuts of all sizes of inner tubes. To operate, the tube is grasped with one hand holding the spreader to prevent it from turning. The valve is inserted in the socket and the crank then turned with the other hand. The front socket turns 2 to 1 and holds the large size nuts. The rear socket is for the small size nuts.

Rockford Valve Nut Machine

In repair work nuts are often rusty and threads jammed or worn, causing the nuts to turn hard. This machine affords ample leverage for removing such nuts without difficulty.—Rockford Tire & Vulcanizing Co., Rockford, Illinois.

Electric Monorail Hoist

The new electric monorail hoist here illustrated is designed to operate in a minimum head room and is made in half ton and ton



"Lo-Hed" Electric Hoist

sizes especially suited for general utility where a light and handy electric hoist is needed. A feature of special importance is that the machine draws up the load hook until it almost touches the rail, which makes it available for use in places where because of low head room no other hoist can be used and makes it possible to utilize storage space almost up to the ceiling.

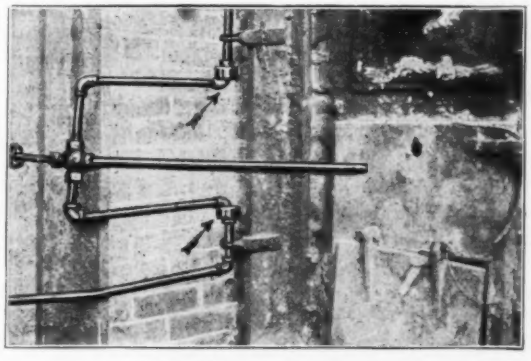
Automatic holding and lowering brakes are provided and a safety device checks the hoist and throws off the current at the upper limit of travel. Its high duty roller bearings and automatic lubrication give an efficiency of 80 per cent, and a factor of safety of at least five makes overloads possible in emergency.

These hoists are furnished for either direct or alternating current. All working parts are completely accessible and the motor can be removed for repairs in a few minutes without touching the load on the hook.—American Engineering Co., Philadelphia, Pennsylvania.

Flexible Joint Oil Burner Installation

The adaptability of flexible pipe joints is here illustrated for one of its many uses. In this instance they serve to afford free movement and freedom from leaks of both steam and oil lines of an oil burner installation, in which steam enters by the upper line and fuel oil by the lower.

Flexo joints are made in 4 styles, from ⅜ to 3 inches, are easily and quickly installed, smooth working and non-binding. They represent a radical departure in flexible and swing joint con-

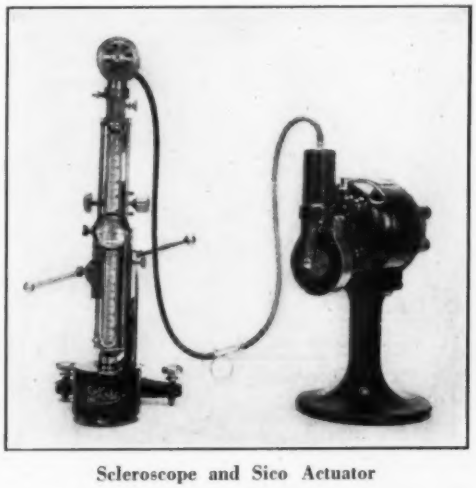


Flexo Joints on Oil Burner

struction and do not depend on packing, springs or ground parts; the pressure alone keeps them tight.—Flexo Supply Co., St. Louis, Missouri.

Automatic Scleroscope Actuator

In many mass production operations, the Scleroscope is operated continuously, requiring the operator to make several thousand tests. This condition has developed a demand for an auxiliary actuating



Scleroscope and Sico Actuator

device to relieve the operator of all muscular effort, except merely pressing a small trigger.

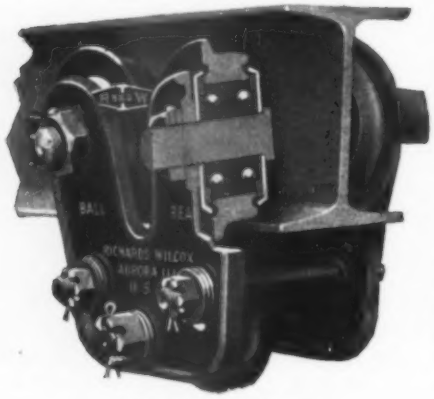
The illustration shows an electric pneumatic machine designed for this purpose connected to a vertical scale Scleroscope, Model C-1, by a rubber tube. There is a controller valve; a ring by which it

is held by the operator's finger; and a trigger valve is operated by another finger of the same hand. The electric machine runs continuously at a speed correct for operating the Scleroscope. It has the same suction and compressive force as the operator would have with the usual rubber bulb.

By this arrangement a succession of tests can be made without the use of the trigger, except to hold it drawn in, making air connections with the motor. This enables the operator to pass the Scleroscope over a surface for quick determination of uniformity or average hardness, which is very important. The timing for drawing up the hammer, release and rebound, is done automatically by the high-grade slow-speed motor employed and is so calculated that following each rebound the hammer is drawn up before it can fall back again on the test specimen. This serves to effect a material saving in hammer wear, as well as in the operator's time.—The Shore Instrument & Manufacturing Co., 9025-29 Van Wyck avenue, Jamaica, N. Y.

Ball Bearing Trolley

Conveying equipments of the overhead type are very generally utilized for plant transportation purposes. For smooth and efficient working in connection with lifting and transferring materials, etc., such systems require well made trolleys of appropriate design. The ball bearing I-beam trolley here pictured is the outcome of long endeavor to overcome every fault common to I-beam trolleys.



R-W I-Beam Trolley

Among its many exclusive features are bumpers which protect the wheels from chipping; an exceptionally short wheel base permitting easy operation on curves; bearings protected from gritty dust by felt washers; crowned wheel treads, which reduce friction; and combination radial and thrust ball bearings. The spreader rods are set loose in slotted holes so that the trolley is hinged from the load pin, insuring even distribution of the load on all four wheels under every condition.

These trolleys are made in seven sizes, ranging in capacity from a quarter ton to four tons. Each trolley is adjustable to three sizes of I-beams. Richards-Wilcox Manufacturing Co., Aurora, Illinois.

Machinery Patents

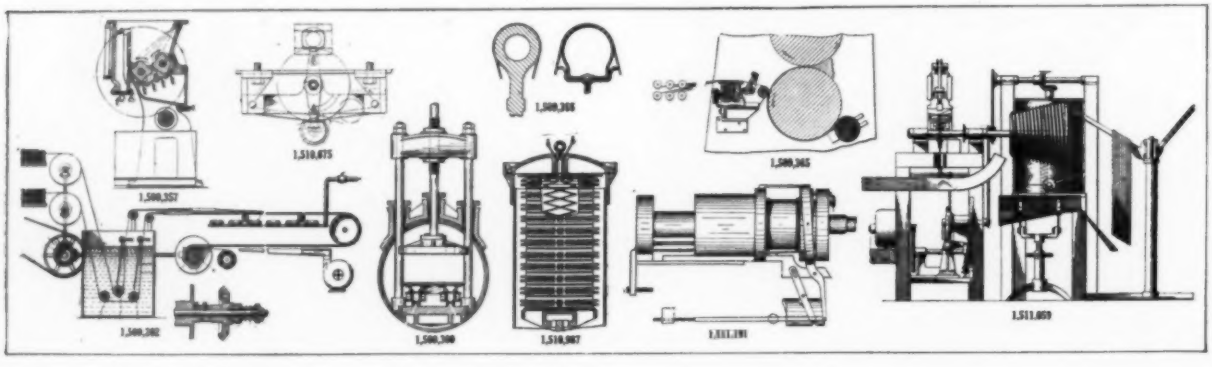
The United States

(1,509,202). APPARATUS FOR PRODUCING STRANDS FOR TIRE fabric. Spooled yarns are guided through a tank of rubber cement where they are thoroughly impregnated, and thence passed through folding devices wherein they are arranged in contacting superimposed layers forming strands. In further passage through the apparatus these strands are dried by steam coils and subsequently wound on a beam with muslin interposed between the layers to prevent their adhesion. The rubberized strands on the beam may be woven into fabric.—Hans E. Grabau, assignor by mesne assignments, to Multiple Cord Corporation, both of New York, N. Y. United States patent No. 1,509,202.

(1,509,357). MACHINE FOR WASHING RUBBER. This comprises rotary squeeze rolls disposed in a washing trough, the bottom of which is slotted after the manner of a seive, removable closing ledges being introduced into these slots. Back of the squeeze rolls is a settling chamber separated from the washing section by a perforated partition through which the impurities are quickly removed by action of the rolls.—Fritz Kempter, Stuttgart, Germany. United States patent No. 1,509,357.

(1,509,365). MACHINE FOR PRODUCING CORD FABRIC. Better impregnation of the interior of cords in a tire fabric is secured by wetting the cords with a rubber solvent before passing them through a calender for rubberizing. Wetting is effected by passing the cords over a wick which draws the liquid up from a container. The device is essentially an adjunct to a calender for preparing the cord to better receive the rubber coating.—Thomas Midgley, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,509,365.

(1,509,366). METHOD OF FORMING TIRE CASINGS. A 2-ply band of tire binding material is placed over an expansible air tube mounted on a rim and is stretched and shaped by expanding the air tube into substantially a form in which the maximum circumference of the band is practically that of the core or former upon which the tire is to be completed. The band is thus given both circumferential and longitudinal stretch and the strain resisting elements are in the proper positions to best bear the strains to be placed upon them in vulcanization and use.—Thomas Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,509,366.



(1,509,380). VULCANIZER. A combination of one or more hand screw presses arranged in connection with a horizontal steam vulcanizer for compressing molded articles during vulcanization. The vulcanizer wall is completely relieved from strain by suspend-

ing the pressing table for mounting the molds at the lower extremities of two or more draw bars which pass with free movement through the upper portion of the vulcanizer and are connected by a cross beam, which also serves as a bearing for the threaded pressure rod. —Josef Talalay, Berlin, Germany. United States patent No. 1,509,380.

(1,510,675). FEED DEVICE. This is a mechanism designed to feed small blanks of leather, such as ankle patches for shoes, to an embossing die mechanism or press. The operator has only to center a blank patch by a curved gage on a revolving table which is automatically brought under the die by revolution of the table. After embossing the patch is thrown aside by centrifugal action.—Thomas B. Huestis, assignor to National India Rubber Co., both of Bristol, Rhode Island. United States patent No. 1,510,675.

(1,510,987). VULCANIZATION APPARATUS. Means are provided in a tire vulcanizer to segregate the space inside the periphery of the tire molds from that outside the molds. By this feature the inner chamber can be maintained cool while heat is applied to the outer one. —Hadley F. Freeman, Milwaukee, Wisconsin, assignor by mesne assignments, to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,510,987.

(1,511,059). APPARATUS FOR COATING AND DRYING TIRE BEADS. Bead strips, stapled together at the ends to form a ring, are dropped on a rotating drum which is conical and spirally grooved. The lower side of the bead circles dip into cement in a trough under the drum and travel through it, being raised out of the cement as they reach the large end of the drum, where they are discharged onto an arm of a drying rack or reel.—Harvey F. Maranville, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,511,059.

(1,511,191). CUTTING DEVICE. An apparatus providing a combination of devices for cutting hose of indefinite length into pieces of definite length, as in the case of hose for automobile radiator connections. The hose to be cut is fed by hand through the hose guide or chuck against a stop. The axial movement causes the slotted chuck head to contract and squeeze the hose, tightly clamping it for the cutting operation.—Hugo C. Weisse and George L. Mather, Milwaukee, Wisconsin, assignors, by mesne assignments, to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,511,191.

Other Machinery Patents

The United States

1,508,814 Apparatus for vulcanizing tire liners and the like. E. J. Moran, Chicago, Illinois.

1,509,259 Apparatus for manufacturing cushion tires. C. E. Rett and G. S. Anderson, Akron, assignors to Lambert Tire & Rubber Co., Barberton, all in Ohio.

1,509,346 Pneumatic tire making apparatus. J. L. G. Dykes, Chicago, Illinois.

1,509,446 Mold for making air tubes. T. B. McLeroth, London, England.

1,509,456 Hydraulic molding press. Josef van Hullen, Crefeld, Germany.

1,510,276 Vulcanizing apparatus. D. E. Hennessy, Milwaukee, Wisconsin.

1,511,579 Tire wrapping machine. F. M. Pierce, P. Pierce, and W. B. Pierce, Chicago, Illinois, assignors to Pierce Wrapping Machine Co., a corporation of Illinois.

1,511,810 Vulcanizer. W. A. Gwynn, assignor to S. E. Gwynn, both of St. Louis, Missouri.

The Dominion of Canada

243,400 Tire repair mold. M. T. Barney, Los Angeles, California, U. S. A.

243,448 Collapsible tire building core. J. R. Quin, Cudahy, Wisconsin, U. S. A.

243,478 Tire vulcanizing mold equipment. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of W. Steinle, Flushing, New York, U. S. A.

243,520 Apparatus for rubberizing filamentary material. Ernest Hopkinson, New York, N. Y., U. S. A., and The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of Kenneth B. Cock, East Orange, New Jersey, U. S. A.

243,521 Tire casing manufacturing apparatus. Ernest Hopkinson, New York, N. Y., U. S. A., and The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of William Steinle, Flushing, New York, U. S. A.

The United Kingdom

219,799 Tire building machine. W. H. Hermann, Columbus, Ohio, U. S. A.

220,022 Apparatus for molding tires. D. Bridge & Co., Ltd., Castleton Iron Works, Castleton, near Manchester. (Lee Tire & Rubber Co., Conshohocken, Pennsylvania, U. S. A.)

220,148 Repair vulcanizer. F. G. Green, 173 Barclay Road, Bearwood, Birmingham, and E. L. Penhale, 32 Dudley Road, Brades Village, near Birmingham.

220,350 Electric vulcanizer. E. J. Rohne, 112 East 34th street, Minneapolis, Minnesota.

220,356 Rubber-washing machine. F. Garner, Croft House, New Smithy, Chapel-en-le-Frith, Derbyshire, and J. Robinson & Co., Ltd., Springfield Lane Iron Works, Greengate, Salford, Manchester.

220,596 Apparatus for cutting rubber. F. Kempter, 10 Heinestrasse, Stuttgart, Germany.

New Zealand

52,287 Tire gaiter mold. J. Howard, 169 Dee street, Invercargill, New Zealand.

Germany

Patents Issued, With Dates of Issue

401,801 (March 14, 1922). Apparatus for making a means for drying rubber latex. General Rubber Co., New York, N. Y. Represented by R. H. Korn, Berlin S. W. 11.

401,802 (June 26, 1920). Rubber kneading and mixing machine. Farrel Foundry & Machine Co., Ansonia, Conn., U. S. A. Represented by G. Benjamin and H. Wertheimer, Berlin S. W. 11.

401,803 (June 26, 1920). Rubber kneading and mixing machine. Farrel Foundry & Machine Co., Ansonia, Conn., U. S. A. Represented by G. Benjamin and H. Wertheimer, Berlin S. W. 11.

401,804 (July 7, 1920). Mold for making balls and other hollow goods of rubber. Paramount Rubber Consolidated, Inc., Philadelphia, Pa., U. S. A. Represented by Dr. B. Block, Berlin N. W. 21.

401,805 (January 5, 1923). Vulcanizing kettle press. Eisenwerk Gebrüder Arndt, G. m. b. H., Berlin.

402,834 (December 1, 1923). Device for gluing and nailing rubber heel patches to footwear. Hellmut Schönfeld, Blumenthal bei Hannover.

402,835 (December 16, 1922). Apparatus for making rubber shoes, sandals and the like. Ivan K. Wetrensky, T. Bazardjik, Bulgaria. Represented by Dr. R. Geissler, Berlin S. W. 11.

Design Patents Issued, With Dates of Issue

881,952 (August 5, 1924). Vulcanizing apparatus for dental purposes. Firma Jacob Brinzer, Leipzig.

Process Patents

The United States

1,508,901 Method of treating and mixing vulcanized rubber. W. Stocks, Miramar, Near Wellington, New Zealand.

1,509,363 Method of preparing rubber stock. C. E. Maynard, Northampton, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,509,366 Method of forming tire casings. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

1,509,814 Method of making a pneumatic tire casing. J. L. G. Dykes, Chicago, Illinois, assignor by mesne assignments to Heller-Dykes Corp., a corporation of Illinois.

1,509,938 Process for making rubber-tire articles and the like. J. L. G. Dykes, Chicago, Illinois, assignor to Dykes Tire Machinery Co., Washington, D. C.

1,510,449 Method of manufacturing machine belts. F. F. Brucker, assignor to the Miller Rubber Co., both of Akron, Ohio.

The United Kingdom

219,507 Method of rubberizing fabrics. E. F. King, 20 Pond street, Wakefield, Rhode Island, U. S. A.

219,738 Method of making a cord tire. F. B. Dehn, 53 Doughty street, London. (Dickinson Cord Tire Corporation, 200 West 19th street, New York, N. Y., U. S. A.)

219,749 Method of attaching metal to India rubber. A. I. G. Warren, 375 Croydon Road, Caterham Valley, Surrey.

220,115 Method of joining the ends of a solid rubber strip to form an endless tire. Cornbrook Rubber Co., Ltd., and J. Ferguson, Leadenhall street, London.

220,221 Method of making rubber articles, such as tobacco pouches, handbags, etc. North British Rubber Co., Ltd., and W. G. Martin, Castle Mills, Fountainbridge, Edinburg.

220,563 Method of manufacturing a pneumatic tire. G. W. Daum, 303 North Second street, Jeannette, Pennsylvania, U. S. A.

Germany

Patents Issued, With Dates of Issue

402,324 (March 27, 1921). Method and vulcanizing mold for making hollow articles of rubber. Paramount Rubber Consolidated, Inc., Philadelphia, Pa., U. S. A. Represented by Dr. P. Breitenbach, Dusseldorf.

402,959 (June 9, 1923). Method of making sanitary sponge rubber toys. Uebersee-Gummiwerke A. G., Wandsbek.

The Editor's Book Table

Book Reviews

"STANDARDS OF PRACTICE FOR RUBBER BELTING," Boston Woven Hose & Rubber Co., Cambridge, Massachusetts. Paper, 71 pages, 6 by 9 inches. Indexed. Illustrated.

The author has successfully accomplished his avowed object, set forth on the title page, of producing a book "written so you can understand it." This he has done in a series of five chapters discussing in turn the principles of rubber belting; of Bull Dog and Perfection brands of belting, their construction, characteristics, physical testing, application and care in service.

The final chapter embraces rules for belting practice covering the essential problems with which a belt user should be familiar. This chapter contains also tables of horsepower for Bull Dog and Perfection belts at varying rates of speed and two charts for ascertaining graphically working data for belt practice under all conditions. The information is briefly indexed and the explanations of the text simple, clear and profusely illustrated with informing pictures.

The book is not in any sense a catalog but a valuable manual for all belt purchasers and users.

"THE SCIENTIFIC AMERICAN CYCLOPEDIA OF FORMULAS," 1924. Scientific American Publishing Co., New York, N. Y. Cloth, 6 by 9 inches, 1077 pages. Illustrated.

This convenient reference volume, partly based upon the twenty-eighth edition of Scientific American Cyclopedia of Receipts, Notes and Queries, contains 15,000 formulas on a wide range of industrial subjects embraced in 27 chapters. One chapter of 16 pages is devoted to celluloid, gutta percha and rubber. The volume contains an appendix covering laboratory equipment, chemical manipulation, and weights and measures. The book is well indexed for convenient reference.

"THE RUBBER QUARTERLY." ISSUED BY WILLIAM, JAMES, and Henry Thompson, produce brokers, 38, Mincing Lane, London, E. C. 3, England. Paper, 16 pages, 7½ by 10 inches.

In this new publication, the first issue being dated August 15, 1924, there are some important statistics regarding the world's rubber industry, as well as several articles describing conditions in the chief rubber-producing countries. A report in connection with the London market is included, as well as a review of the American rubber industry. The Quarterly is printed on rubber latex paper.

New Trade Publications

STATISTICS WHICH AFFORD A KEY TO THE PURCHASING POWER of the population in thirty-one distributing centers throughout the United States have been prepared in a bulletin entitled "Population's Purchasing Power," and issued by the Domestic Distribution Department, Chamber of Commerce of the United States, Washington, D. C. The pamphlet contains tables based on the 1920 Census statistics and also statistics gathered by the Department of Labor, and represents information of especial value to manufacturers in their attempts to fix sales quotas. Copies of the present pamphlet may be obtained from the United States Chamber of Commerce.

SOME INFORMATION REGARDING THE NEW PROCESS OF MANUfacturing transparent rubber goods appears in the illustrated autumn edition of "Rubberware Sales," a catalog published by Reliance Rubber Co., Limited, 212-213 Upper Thames street, London, E. C. 4, England. The bulletin is edited by Fordyce Jones.

AN ILLUSTRATED CATALOG REGARDING THE USE OF HYCOE BRAKE lining is being published by The Manhattan Rubber Manufacturing Co., Passaic, New Jersey. The publication contains some valuable advice for the motorist in connection with the care and testing of brakes, as well as furnishing information as to the causes and remedies of brake troubles.

A NEW BULLETIN ENTITLED "ALLIS-CHALMERS TIMKEN ROLLER Shaft Bearing" is being issued by the Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin. The publication illustrates the simple yet effective construction of the new equipment, while its installation is said to result not only in a saving of power, but also in an elimination of most of the expense of lubrication.

AN ATTRACTIVE BULLETIN, PRINTED IN COLOR AND ENTITLED "Distinctive Floors—Gold-Seal Rubber Tile," is being sent out by the Bonded Floors Co., Inc., a division of the Congoleum Co., Inc., 35 West 45th street, New York, N. Y. The various illustrations represent not only the company's different styles of marbleized rubber tiling, but also examples of the installation of this tiling in banks, hotels, laboratories, etc.

REALIZING THE NECESSITY FOR THE MAINTENANCE BY MANY plants of both night and day schedules, the Cooper-Hewitt Electric Co., 95 River street, Hoboken, New Jersey, is manufacturing special lighting equipment with such needs in mind. The concern's newest bulletin, entitled "Work-Light," is well illustrated, while separate reports have also been prepared regarding the company's practical contributions toward improved service for the various industries. Installations have been made at several well-known rubber factories.

"FACTORY FLOOR SURFACES." BY A. B. MACMILLAN, CHIEF engineer, Aberthaw Co., and published by Aberthaw Co., Boston, Massachusetts, is intended to supplement the author's first book, "Estimating Concrete Buildings." The present volume represents a summary of the Aberthaw company's experience in factory construction extending over a period of more than twenty-five years. The publication is divided into two parts, namely, "Types of Floors" and "Specifications."

UNDER THE TITLE "A NATIONWIDE MERCHANDISING OPPORTUNity" an illustrated booklet regarding the four leading automobile shows soon to be held is being sent out to the trade by the Motor and Accessory Manufacturers' Association, 250 West 57th street, New York, N. Y. In this publication various details appear in connection with these four exhibitions, including cost of accessory space, motor vehicle registration of the territory, etc. Application blanks and complete information will, as soon as available, be sent by the Association to those interested.

A NEW PUBLICATION DESCRIBING THE VARIOUS VULCANIZATION accelerators used in the rubber industry is being issued by the Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y. A number of instructive charts are included in this rubber manual, which should be in the hands of every rubber chemist. Copies may be obtained without charge from the Roessler & Hasslacher organization.

A NEW TYPE OF MATCH BOX PROTECTOR WHICH WILL BE FOUND useful is being sent out to the trade by the Reynolds Machine Co., Massillon, Ohio, specialist in tire molds and "Remaco" cores.

ACCORDING TO REPORTS PUBLISHED BY THE GEORGETOWN CHAMber of Commerce, the imports into British Guiana of India rubber and gutta percha increased from a value of $14,513 during the first half of 1923 to $37,663 for the corresponding period of 1924.

Recent Articles Relating to Rubber

Occurrence of Rubber in German Lignite Deposits. The so-called "Affenhaare" observed in German lignites in the neighborhood of Cöthen consist of the dried sap of the rubber plant and hence of rubber which has not participated in the formation of coal. The product has become more or less vulcanized owing to the presence of compounds of sulphur in the surrounding plant material.—E. Kindscher, *Berichte der Deutschen Chemischen-Gesellschaft*, 1924, 57, 1152-1157.

Speed of Sedimentation of Emulsions Such as Milk, Blood and Latex. The addition of a small quantity of certain colloids, especially carraghen moss, accelerates the sedimentation of the emulsified particles of rubber latex, of milk, and of blood sera. Cow's milk and goat's milk behave differently, a coagulum of casein being always obtained with goat's milk, whereas with cow's milk cream separates. It is suggested that the sedimentation of the emulsified particles is possibly due to the fact that an opposite charge is imparted to them by the added colloid.—K. Sakurei, *Biochemische Zeitschift*, 1924, 149, 525-533.

Patents on Accelerators for the Vulcanization of Natural or Artificial Rubbers. Thirty patents are listed with a brief abstract of the patent claim.—S. Halen, *Kunstoffe*, 12, 147-9, 1922.

Examination and Analysis of Rubber from the Dutch East Indies Plantations. A description of the work carried out by the Central Rubber Station at Buitenzorg, and of the testing methods used, with an outline of the results obtained to date.—J. J. B. Deuss. *Chimie et industrie* 11, 1078-82, 1924.

Advances in the field of Rubber and of Gutta Percha (1919-23). Frederich Emden. *Zeitscrift für Angewandte Chemie*, 37, 561-9, 594-8, 1924.

An X-ray Examination of Zinc Oxide in Vulcanized Rubber. Gum rubber contains no crystalline substance. Two samples of vulcanized rubber, each containing zinc oxide, showed a diffraction pattern identical to within 0.1 per cent with that of ordinary zinc oxide. There was no evidence of crystalline sulphur or zinc sulphide.—W. P. Davey, *The Physical Review*, 719, 1923.

An Extraction Apparatus for Rubber Analysis. Felten and Guilleaume. *Zeitschrift für Angewandte Chemie*, 57, 510-1, 1924.

Important Advance in the Chemistry of Rubber. (German) Kurt Gottlob. *Gummi-Zeitung*, September 19, 1924.

Vulcanization and Accelerators. Part I. Theory of Vulcanization. Serial. André Dubosc. *Rubber Age*, New York. September 25, 1924, 459-461.

The Acidity of Raw Rubber. Lecture by G. Stafford Whitby before the Institution of Rubber Industry, London, September 1, 1924. The topics discussed include: (1) Water Soluble Acidity; (2) Nature of the rubber acids; (3) Amount of acid present; (4) Acidity of old samples; (5) The acids and latex; (6) Mode of occurrence; (7) Relation to swelling and milling; (8) Influence of acids on vulcanization; (9) The reaction of sulphur with Hevea resins. *Rubber Age*, London, October, 1924, 401-414.

Hopkinson Sprayed Latex Rubber. Report on several samples of sprayed latex rubber examined at the Imperial Institute in connection with the investigations carried out under the Ceylon rubber research scheme. *Rubber Age*, London, October, 1924, 428-430.

Contribution to the Study of the Vulcanization of Rubber in the Sol and Gel Form. Serial. A thesis presented to the Faculty of Sciences at Clermont Ferrand University, for which the degree of Doctor was awarded. Dr. F. Boiry. *India Rubber Journal*, London, September 13, 651-654; September 20, 687-689; September 27, 727-731; October 4, 771-773, 1924.

Recent Developments in Rubber Accelerators. A non-technical summary of various used accelerators. Discussion of the purpose and kinds of accelerators, factors influencing their choice, hot and cold cure methods, and new vulcanization processes. Julian F. Smith. *Industrial and Engineering Chemistry*, October, 1924, 1024.

Manufacture of Gutta Percha Sheet. *Gummi-Zeitung*, September 5, 1924, 1054.

Recent Vulcanizing Processes. (Continuation). Dr. S. Halen, *Kunstoffe*, September, 1924, 136-137.

Manufacture of Rubberized Fabrics I. D. Noblué. *Le Caoutchouc & la Gutta Percha*, September 15, 1924, 12332-12335. Diagrams.

Tests of Rubber Thread. English, American and Italian thread was tested. *Le Caoutchouc & la Gutta Percha*, September 15, 1924, 12358-12359. Tables.

Formulæ for Mixings. (Continuation). Varnish for Russian, German and American footwear; varnish for goloshes; gutta percha rods; hard rubber. Dr. R. Ditmar. *Le Caoutchouc & la Gutta Percha*, September 15, 1924, 12360-12361.

The Influence of the Nutrient Environment on the Development of Hevea. Reactions of the soil are of great importance; plants are very susceptible to alkaline concentration, but stand acid reactions very well.—Dr. W. Bobilioff, *Archief voor de Rubbercultuur*, August, 1924, 534-542, Tables, illustration.

Investigations on the Hydrogen Concentration of Latex of Hevea Brasiliensis. The author has worked out a method, to determine the p.H. in latex. The latex, preserved with glycerine, was dialyzed a long time and in the dialysis hydrion was colorimetrically determined.—Dr. W. Bobilioff, *Archief voor de Rubber-cultuur*, September, 1924, 607-624.

Investigations on the Role of Albumen in Hevea Latex. The importance of albumen in coagulation, ripening and drying of rubber and the coagulation of Hevea latex by enzymes.—J. Groenewege, *Archief voor de Rubber-cultuur*, September, 1924, 626-650. Tables.

Calendar

NOVEMBER

Twentieth Annual Automobile Salon, Nov. 9-15. Hotel Commodore, New York, N. Y.

Automotive Equipment Association, Nov. 10-15. Annual convention and show, Coliseum, Chicago, Illinois.

National Association of Cotton Manufacturers, fall convention. Copley-Plaza Hotel, Boston, Massachusetts; Nov. 12-13, 1924.

Committee D-13, American Society for Testing Materials, fall meeting, Providence, Rhode Island; Nov. 14-15, 1924.

Society of Automotive Engineers and National Automobile Chamber of Commerce, Nov. 18-19. Joint service meeting, Cleveland, Ohio.

National Tire Dealers' Association, Nov. 18-20. Annual convention, Akron, Ohio.

DECEMBER

National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.; Dec. 1-6, 1924.

Textile Division, American Society of Mechanical Engineers, meeting, New York, N. Y.; Dec. 2, 1924.

American Institute of Chemical Engineers. Hotel Shenley, Pittsburgh, Pennsylvania; Dec. 3-6.

American Society of Mechanical Engineers, New York, N. Y.; Dec. 1-4.

JANUARY

Society of Automotive Engineers, Jan. 8, 1925, annual dinner, New York, N. Y.

National Automobile Chamber of Commerce, Jan. 2-10. National automobile show, Bronx Armory, New York, N. Y.

National Automobile Dealers' Association, Jan. 5. New York Show Convention, Hotel Commodore, New York, N. Y.

Philadelphia Automobile Trade Association, Jan. 10-17. Twenty-fourth Annual Automobile Show. Commercial Museum, Philadelphia, Pennsylvania; W. H. Metcalf, executive secretary.

Brooklyn Motor Vehicle Dealers' Association, Inc., Jan. 17-24. Fourteenth Annual Brooklyn Automobile Show, Twenty-third Regiment Armory, Brooklyn, New York.

Southern Exposition, Grand Central Palace, New York, N. Y.; Jan. 19-31, 1925.

Society of Automotive Engineers, Jan. 20-23, 1925. Annual meeting, Detroit, Michigan.

National Automobile Chamber of Commerce, Jan. 24-31. National Automobile Show, Coliseum and First Regiment Armory, Chicago, Illinois.

National Automobile Dealers' Association, Jan. 26-29. Eighth annual convention, Hotel La Salle, Chicago, Illinois.

Twentieth Automobile Salon, Jan. 26-31, Chicago, Illinois.

Pittsburgh Automobile Dealers' Association, Jan. 31-Feb. 7. Twenty-ninth Annual Automobile Show, Motor Square Garden, Pittsburgh, Pennsylvania; John J. Bell, manager.

THERE IS APPARENTLY A STEADY MARKET FOR AMERICAN-MADE rubber toys, balls, and toy balloons. Exports of these goods during the first seven months of 1924 show the following total values: January, $47,593; February, $68,262; March, $80,244; April, $77,060; May, $90,734; June, $73,102; and July, $79,791.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(477) We are asked to supply names and addresses of manufacturers of firemen's rubber boots and coats.

(478) From The Netherlands comes a request for information concerning cushion tires, their mileage, efficiency, etc., and addresses of manufacturers thereof.

(479) We are asked for source of supply of rubber makers' crayons.

(480) Request is made for names and addresses of suppliers of cotton flock and wood flour XXX.

(481) Information is desired concerning sponge rubber inner tubes, by whom made, etc.

(482) A list of manufacturers of aldehyde ammonia accelerator for the rubber industry is requested.

(483) Information is desired as to equipment necessary for making small rubber articles, including toys, etc., and addresses of manufacturers thereof.

(484) From Germany comes a request for addresses of American manufacturers of toy balloons.

(485) A Brazilian company desires addresses of manufacturers of machinery equipment for making tennis shoes and of American mills specializing in canvas duck for the purpose.

(486) Inquirer desires to get in touch with importers of transparent raincoats.

(487) We are asked where rubber floor tiling may be obtained.

(488) Address is desired of a rubber reclaiming concern west of the Mississippi River.

(489) A list is requested of rubberizing mills in the vicinity of New York.

(490) We are asked for addresses of manufacturers of cements used in dipped goods.

(491) Names and addresses are requested of manufacturers of electricians' high voltage gloves.

(492) We are asked for addresses of manufacturers of raincoats, especially in the vicinity of Chicago, Illinois.

(493) From England comes a request for addresses of manufacturers of colored rubber sheeting suitable for bathing caps, etc.

(494) Address is requested of a manufacturer of rubber thread.

FOREIGN RUBBER TRADE INFORMATION

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
601	"Raincoat Trade in Brazil," etc., etc.
602	"Rubber Soled Shoes in Naples, Italy," etc., etc.
*608	"Retail Tire Prices in Hongkong."
611	"Tire Market of Medan, Sumatra," etc., etc.
*612	"Automobile Tire Business in the East Canary Islands."
*613	"The Tire Market in Czechoslovakia."
*615	"Tire Prices in British South Africa."
*616	"The Rubber Industry in Latvia."
617	"Trade in Water Bottles and Syringes in Budapest, Hungary," etc., etc.
*618	"Trinidad Market for Tires."
619	"Tire Market of San Jose, Costa Rica," etc., etc.
620	"Automobile Tire Covers in Hongkong," etc., etc.
*621	"Market for Tires in Poland."
*622	"Retail Tire Prices in Rumania."
*623	"Market for Balloon Tires in Rio de Janeiro."
*629	"Market for Rubber Heels in Mexico City."
*631	"Retail Tire Prices in Poland."
*632	"Preliminary Statistics of Dealers' Stocks of Automobile Tires."
635	"Tire Market of Mazatlan, Mexico," etc., etc.
*640	"September Imports of Rubber Tires and Tubes."

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
11,737	Java—Machinery and equipment for rubber estates	Agency
11,741	South Africa—Advertising novelties, including rubber articles	Purchase
11,747	The Netherlands—Pencils and fountain pens	Purchase and agency
11,753	Chile—Tires for heavy motor buses	Purchase and agency
11,763	India—Toy balloons	Purchase and agency
11,773	Belgium—Rubber water bottles, syringes, sponges, bathing caps, aprons, gloves, and mechanical rubber goods	Agency
11,881	Martinique—Rubber heels	Agency
11,951	Canada—Elastic braid	Purchase
11,957	Sweden—Rubber belting, sheetings, and novelties	Agency
11,958	South Africa—Toy balloons	Agency
11,959	Ireland—Rubber heels, all sizes	Purchase

Judicial Decisions

STATE FORWARDING & SHIPPING CO. VS. UNITED STATES. United States General Appraisers, New York, N. Y., October 10, 1924. Protest 4846—G against the assessment of duty by the collector of customs at the port of New York. (T. D. 40409—G.A. 8863.)

In a protest regarding the appraisal of "return balls," small balls either of rubber or other material and having an elastic string attached, the decision finally was that they should be assessed at 30 per cent ad valorem under paragraph 1402, tariff act of 1922, rather than as toys at 70 per cent ad valorem under paragraph 1414 of the same act. A dissenting opinion, however, was held by General Appraiser McClelland.—*Treasury Decisions*, Volume 46, No. 16, page 25.

Appraisers' Decisions

No. 47550.—Protest 971053 of American Shipping Co. (New York).

LEATHER FOOTBALL AND BASKET BALL CASES—RUBBER BLADDERS—ENTIRETIES.—Leather football and basket ball cases and bladders for the same packed in the same case and stamped with the name "Yankee" were treated as entireties and classified at 30 per cent ad valorem as manufactures of leather under paragraph 360, tariff act of 1913. They are claimed dutiable separately.

Opinion by McClelland, G. A. From the evidence it was found that the cases and bladders should be classified separately, the cases as manufactures of leather at 30 per cent under paragraph 360 and the bladders at 10 per cent under paragraph 368.—*Treasury Decisions*, Volume 46, No. 4, page 15.

No. 47580.—Protest 9640-G of Pogo Co. (New York).

POGO STICKS.—Pogo sticks composed of wood, metal, and India rubber, wood chief value, classified as toys at 35 per cent ad valorem under paragraph 342, tariff act of 1913, are claimed dutiable as manufactures of wood at 15 per cent under paragraph 176.

Opinion of Sullivan, G. A. On the authority of G. A. 8687 (T. D. 39802), the pogo sticks in question were held dutiable under paragraph 176 as claimed.—*Treasury Decisions*, Volume 46, No. 4, page 19.

No. 47781.—Protest 8981-G of A. W. Fenton, Inc. (New York).

FOOTBALL BLADDERS.—Football bladders composed in chief value of India rubber, classified as unfinished footballs, at 30 per cent ad valorem under paragraph 1402, tariff act of 1922, are claimed dutiable as manufactures of India rubber at 25 per cent under paragraph 1439.

Opinion by McClelland, G. A. The football bladders in question were held dutiable under paragraph 1439 in accordance with the amended report of the appraiser.—*Treasury Decisions*, Volume 46, No. 13, page 25.

New Goods and Specialties

"Puttee" Overshoe

ONE of the novelties of the present rubber footwear season is the "Puttee" overshoe of simple, smart and trim appearance. It wraps around the ankle and is held by one firm, invisible snap, easily and quickly fastened and adjustable to fit snugly any size or shape of foot and ankle. There is nothing about it to tear clothing. The straw-colored lining will not mar the light-colored stockings now in style.—Tyer Rubber Co., Andover, Massachusetts.

A Tan Sole That Does Not Mark Floors

The "Halesole," of Composition Rubber

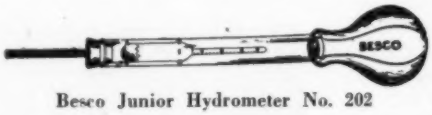
After years of intensive study and experiment a tan composition rubber soling for tan shoes that is claimed not to mark floors or polished furniture has been placed on the market under the trade name "Halesole." Smooth, pliable, comfortable and good looking, it combines healthful springiness with remarkable wear-resisting qualities. By actual test it is said to outwear leather. Like its black companion, the "Cutlerite" sole, it is marketed in the form of molded soles, taps and soling sheet, size 12½ by 25 inches.—Alfred Hale Rubber Co., Atlantic, Massachusetts.

The Golfer's Christmas Box

The United States Rubber Co., 1790 Broadway, New York, N. Y., in order to keep the name of its "U. S. Royal" golf ball before the public and to stimulate business during the holiday season is offering to the trade a "Golfer's Gift Box," which is exceptionally compact, covered with blue leatherette cloth, and contains a removable tray holding a half-dozen "U. S. Royal" golf balls, and in addition one box of Reddy Tees, a copy of "Ready References to the Rules of Golf" by Innis Brown, a roll of adhesive tape in a sanitary container, a golf pencil, and a copy of "Even Threes," by Owen Johnson. Inasmuch as the half-dozen golf balls alone retail for $4.50, it is obvious that the price to the retailer which will enable him to sell the gift collection for $5.00 is unusual. Every branch store has been sent samples of this popular Christmas trade attraction, and orders will be taken care of by the mechanical goods department of any branch.

New Low-Priced Hydrometer of Quality

The principal selling points claimed for the new hydrometer shown in the illustration are the ample size of the float and its clear calibrations, which are accurate to a very close degree; the prongs which prevent the hydrometer from sticking to the sides of the barrel and hold it in an upright position; the unusually good quality of the rubber, insuring resistance to the action of sulphuric acids; and the price, which is said to be exceptionally low. An attractive display carton printed in blue and orange and having one hydrometer mounted on the cover is included in the merchandising plan. The carton cover carries artistic illustrations of the need of the hydrometer for testing radio "A" and "B" and automobile batteries.—The Battery Equipment & Supply Co., 1638-1640 South Wabash Avenue, Chicago, Illinois.

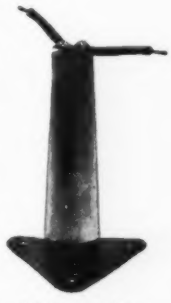


Besco Junior Hydrometer No. 202

Hard Rubber Antenna Insulators

Lead-in for Window Frames

The lead-in insulator illustrated is molded of hard rubber with a brass conductor through the center. When installed it is wind-proof, weather, and waterproof, the manufacturers claim. It may be had in 4-inch size for windows or in 10-inch size for walls and casings. The wall insulator pictured is designed expressly for carrying aerial and ground leads along the walls or ceilings of buildings. It has a steel base molded into the hard rubber column and holds the wire five inches from the building, as required by the underwriters. It holds securely any size wire, from No. 14 to No. 4.—The M & M Co., 500 Prospect avenue, Cleveland, Ohio.



Wall Insulator

All-Rubber "Neverpinch" Rim Cover

A new rim cover designed to fit all cars is made of pure rubber in a patented V-shape which lies smoothly along the rim and, the manufacturer claims, cannot creep, bind, curl, or stick. It is easily adjusted and removed and can be used over and over again. No gaging of length or position is required. The flap is simply placed inside the tire and the valve stem inserted and the tube partially inflated. The rubber adjusts itself to any bead or distance between beads and under air pressure fills all dangerous corners, so that there is no danger of tube pinching even when the tires are underinflated, it is claimed.—The Falls Rubber Co., Cuyahoga Falls, Ohio.

Laminated Sponge Rubber Foot

Perhaps the most beneficent of the recently developed uses of sponge rubber is in the manufacture of the artificial foot shown in the illustration. It is of laminated sponge rubber, constructed on the same principle as a cord tire and is light, resilient and durable. All action is controlled by compression, a special patented ball bearing equalizing the ankle movement and preventing accidental bending of the knee.—The J. F. Rowley Co., 521-523 W. Monroe St., Chicago, Illinois.

Artificial Foot of Sponge Rubber

Vulco Radio Panels

A high quality of sheet hard rubber, designated by the trade name of Vulco, has been perfected for radio panels and other electrical purposes. It is made in grained mahogany and jet black, highly polished on both sides. Its electrical characteristics comply with the specifications adopted by the Hard Rubber Division of the Rubber Association of America. In mechanical, electrical or machining quality it is unexcelled.—The Vulcanized Rubber Co. 251 Fourth Avenue, New York, N. Y.

Tirco, a New Fabric for Tire Covers

The Du Pont Co., of Wilmington, Delaware, has announced the development of a new fabric for tire covers to be marketed under the name of "Tirco." The Fabrikoid Division of the company states that the new material is especially adaptable for advertising purposes, as paint used for printing on it does not turn white or lose color. It may be had in 50 and 54-inch widths, in pebble and fine grains, bright or medium finish, and with whatever weight of coating is required.

Toy Balloons in the Political Campaign

The red, white, and blue balloons which the Anderson Rubber Co. is marketing lend themselves admirably to political advertising, as shown by the one illustrated. The picture of the president and an apt play on the name make this a particularly popular number. Other balloons with the national colors and carrying no advertising are simply designated as "Patriotic." A special box assortment with 12 dozen in a box and 10 different colors and color combinations is described as a proved "go-getter and bringer-in" of business.—Anderson Rubber Co., Akron, Ohio.

The Political Advertising Balloon

Rubber-Ball Stomach Makes a Musical Doll

"Harmonica Joe"

"Harmonica Joe" is stepping out just in time for the holiday trade. Under his brown overalls and blue shirt, in the place where his abdomen might be, is a sturdy squeezable rubber ball which when pressed sends the necessary air through the harmonica and results in a tune. This novel feature, which is bound to make a popular appeal, is combined with the already well known qualities of the Effanbee dolls, which are well jointed and practically unbreakable. The face and hands of this new doll may be white or brown, as desired.—Fleischaker & Baum, 45 Greene street, New York, N. Y.

Seven-Foot Balloons to Advertise Balloon Tires

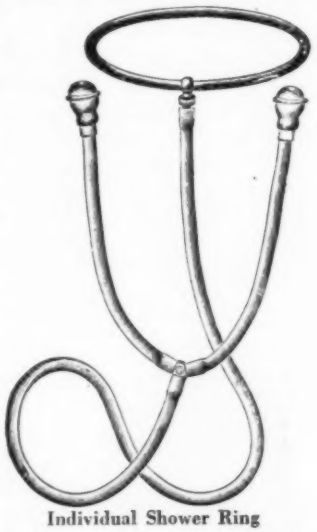
The Goodyear Tire & Rubber Co., Akron, Ohio, is offering to all its dealers immense balloons which when inflated with hydrogen measure seven feet in diameter. These carry advertising of the firm's balloon tires and when floated may be seen for several miles.

Hat Fitting Device

The Ace High "Must Fit" device for making hats of larger size fit smaller heads is said to be very popular. It consists of an invisible elastic strip generally inserted inside the hat at the back, but sometimes on one side or both sides. A patent is pending on this milliners' accessory.—The Ace High Hat Company, Inc., 63 West 38th street, New York, N. Y.

Faucet-Attached Shower Ring

A liberal amount of rubber tubing is employed in the shower ring attachment shown in the accompanying illustration. It may be had with single connection or with the siamese connection through which the temperature of the water may be regulated. With this type of shower ring slipped over the shoulders there is no necessity for using a bathing cap, and when the pores of the ring become clogged they are readily opened.—American Ring Co., Waterbury, Connecticut.



Individual Shower Ring

Rubberized Bath Wig

To perform the function of a bathing cap comes the bathing wig from Paris. It is made of rubberized cotton to represent hair, carefully parted in the middle and combed down and curled over the ears, and is worn like a cap, watertight. This is one of the creations of Viallard. It might be used as well in costume work, for it has a distinctly theatrical air.

Red Faced Insulating Glove

Insulated rubber gloves for electrical workers are indispensable means for handling live wires charged with high voltage electrical energy. But wherever the insulation unexpectedly wears thin at any point there is present the danger of a break of the insulation and a consequent bad accident. The lineman's glove here illustrated was devised to give warning to the wearer of the proximity of danger by exhibiting a warning signal. This object is accomplished by covering the insulated surfaces with a layer of red rubber tire stock so that when the gloves become worn near the danger point the color of the underlying insulation shows in contrast and serves as a timely warning. Gloves of this sort are mold cured and are pressure tested under water to three standards, namely, 2,500, 5,000 and 10,000 volts.—St. Helens Cable & Rubber Co., Limited, Slough, England.

St. Helens Patent Red Cab Tire Faced Insulating Glove

Rubber Battery Tray for Radios

The radio battery tray mat illustrated is made of black non-blooming, acid-resisting rubber with heavy beaded edges and is designed for the protection of rugs and furniture from the liquid that may spill or leak from a battery. It is 8 by 12 inches inside the bead and large enough for a 15-plate "A" battery. Each tray is packed in a separate container.—Atlantic India Rubber Works, 1453-55 Van Buren street, Chicago, Illinois.

Radio Battery Tray

Dunlop's Latest Solid Tire

The latest addition to the Dunlop line of solid tires is the Special Traction Solid pictured. It is designed for dump-load trucks, particularly those that are frequently operated in mud, sand, or clay, and will, it is claimed, greatly lessen the possibility of heel and toe action, or cupping. This is accomplished by means of the grooves of the design on either of the rounded shoulders, which permit soft substances to be released while the tire obtains a firm grip on the road. The rounded shoulders are a special feature, calculated to permit the tire to withstand severe strain.—Dunlop Tire & Rubber Co., Buffalo, New York.

Dunlop Special Traction Solid Tire

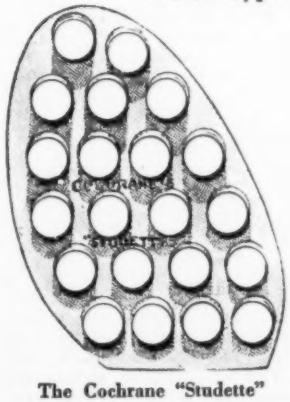
Rubberized Tourist Cases and Bags

Among the tourist cases and bags recently noticed in department stores of the better class is a line made of gay rubberized cretonne. The bags in particular have a round bottom permitting them to be placed on any flat surface without tipping over, and they are fitted inside with pockets of varying sizes, intended for the accommodation of toilet articles. The rubberized interior of these bags is pure white.—Superior Specialty Co., 12 Fleming street, Waterbury, Connecticut.

Hard Rubber Telescope Casing

Among the German-made novelties now coming to this country is the Schutz pocket telescope of 4½ power, which is made with brass slide and hard rubber casing. It is said to be clear and powerful, equipped with high grade lenses and 24 m. m. objectives. This is recommended for use when hunting, boating, automobiling, on vacation, or at races.—Henderson Brothers, importers, 93 Federal street, Boston, Massachusetts.

A New Type of Rubber Sole



The Cochrane "Studette"

The manufacturers claim that the "studette" shown in the illustration is the "lightest, most comfortable and most durable" type of rubber soling on the market. These are made in all sizes of women's, children's and men's shoes and are furnished to the trade with nails ready for fitting, or they may be affixed with an adhesive or sewed. Rubber heels are also supplied to suit.—J. P. Cochrane & Co., Ltd., Murano Works, Albert street, Edinburgh.

Professional Basket Ball Shoe

The "Ralph Jones" professional basket ball shoe, designed by an expert, is made with the rubber sole provided with molded suction cups and secured to the substantial duck uppers by a double band of rubber foxing. The heel is specially cushioned to prevent shock and narrow enough to eliminate rubbing and callouses.—The Servus Rubber Company, Rock Island, Illinois.

Adjustable Rubber Tee for Golfers

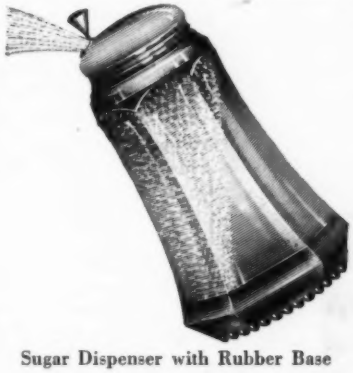
The operation of the all-rubber tee illustrated is extremely simple. You simply slide the center weight toward the low cup and you have the high tee, and reverse the process for the low tee, as desired.—A. G. Spalding & Bros., 523 Fifth avenue, New York, N. Y.

Spalding 2-Hite Tee

Pocket Cat Cry

One of the newer novelties sure to be popular around holiday time is the "Pocket Cat Cry." This is well made in drum shape, 2 inches high and 2¼ inches in diameter, with ends of thick pasteboard to which the side wall of rubberized fabric is cemented. On one end is the picture of a cat's head, with a hole appearing at the open mouth, and connected with this is a squawker device which produces a cat cry when the toy is pinched together by means of a spring concealed within. This device is made in Boston and is on sale at five-and-ten-cent stores.

Rubber Base for Restaurant Sugar Bowls



Sugar Dispenser with Rubber Base

A novel use for rubber is that shown in the illustration, which pictures a new type of sugar dispenser for use in restaurants and cafeterias, the bottom being encased in rubber so that the dispenser will not slip on polished surfaces. It is marketed in sizes to contain from one-quarter pound to a pound of sugar and is supplied with nickel or aluminum top. — The New Martinsville Glass Co., New Martinsville, West Virginia.

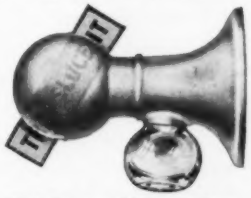
The "Uni (CB) Flex" Sink Stopper

A new sink stopper of red rubber, molded in one piece, with round knob on top in place of the more usual metal ring, is trade marked with the name "Uni (CB) Flex," the initials "C. B." appearing as a kind of monogram between the two parts of the trade mark.—F. W. Woolworth Co., New York, N. Y.

All-Rubber Breast Pumps

An innovation in the druggists' sundries lines is a new type of breast pump made entirely of rubber, the bulb being molded of translucent pure gum and vulcanized to a seamless, all-rubber breast shield. In one model a removable glass milk container is provided in the breast shield. This is easily attached or removed and a stopper is provided so that the contents may be kept safely. In the all-rubber type the bulb acts as a container. In both designs the bulb and shield are vulcanized together, insuring an airtight, non-leaking pump which will withstand modern methods of sterilizing.—The Faultless Rubber Co., Ashland, Ohio.

All-Rubber Breast Pump



With Removable Container

Activities of the Rubber Association of America

Division and Committee Meetings

THE SERVICE MANAGERS' COMMITTEE held its regular monthly meeting on September 23 and 24 at the Ft. Cumberland Hotel, Cumberland, Maryland. The chief topic of discussion was the extent to which the 90-day warranty on pneumatic tires is being made effective and consideration of ways and means of further strengthening its operation.

HARD RUBBER DIVISION. The regular quarterly meeting of the Hard Rubber Manufacturers' Division was held at the Yale Club, New York, N. Y., on October 1.

THE FOREIGN TRADE DIVISION met on October 2 at the Yale Club, New York, N. Y., when consideration was given to a number of problems respecting export trade, chief of which was the extent to which the 90-day tire warranty has been introduced in foreign markets.

THE TRAFFIC COMMITTEE. The regular monthly meeting was held at the Yale Club, New York, N. Y., on October 7. The Traffic Committee carefully reviewed a statement prepared by the Traffic Department of the Association to support the committee's application to the carriers' classification committee for a reduction in the carload rating of crude rubber throughout the United States from fourth to fifth class, with a minimum carload weight of 50,000 pounds. On October 9 the Traffic Committee appeared before the Consolidated Freight Classification Committee in New York, N. Y., in advocacy of this proposition. The Consolidated Classification Committee has not yet announced whether or not the proposed reduction in rating will be granted.

A committee of police chiefs of various railroads, representing the American Railway Association, appeared before the Traffic Committee, requesting its cooperation in a plan to identify each tire in carload shipments, which will assist the railroads' police forces to trace tires pilfered from cars and secure conviction of the thieves.

For the purpose of safeguarding the interests of the rubber industry, the Traffic Committee will appear before the Interstate Commerce Commission in connection with the Commission's investigation of the railroads' proposal to institute a new system of freight rates in eastern territory. The Association's Traffic Department now is preparing a detailed statement of the effect such a revised rate structure would have upon the rubber industry, which will be presented to the Interstate Commerce Commission for its consideration. This statement is based upon tonnage figures submitted by individual members of the Association in response to a questionnaire distributed early in October.

RUBBER SUNDRIES MANUFACTURERS' DIVISION. The Executive Committee met at the Union League Club, New York, N. Y., on October 7. Immediately after the close of this meeting, the Rubber Sundries Manufacturers' Division convened. Consideration

August Production, Inventory and Shipments of Tires

For the third consecutive month, shipments in August of cord and fabric casings, high pressure inner tubes, and solid and cushion tires exceeded production, at the same time representing increases as compared with the month previous, while these figures, with the single exception of fabric casings, indicated advances when compared with August, 1923. The amount of crude rubber consumed in the manufacture of these goods, including balloon tires and tubes, totaled for August 40,384,738 pounds, as compared with 32,624,791 pounds for the previous month and 37,786,086 pounds for January, the highest figure previously for the year. The total amount consumed by the American tire and tube industry during the first eight months of 1924 is estimated as being 285,111,091 pounds, as compared with 215,064,665 pounds for the entire year 1921; 337,612,352 for 1922; and 367,252,670 for 1923.

A satisfactory lessening is also evident in the inventories of all classes of goods mentioned, with the exception of balloon casings, where the number has risen from 116,433 in March, 1924, to 765,002 for August, and balloon inner tubes, where the corresponding figures for March, 1924, are 103,373, the August inventory being estimated at 751,732. Shipments, however, of balloon tires have shown a correspondingly great increase, as since March, 1924, the figures have risen from 141,272 to 435,572 for August, the July shipment being estimated at 393,132. Based on August records it is believed that about 1.8 months' supply of balloon tires is on hand. Shipments of balloon inner tubes have also advanced from 87,733 in March to 369,335 for August.

Combined shipments during August of high pressure cord and fabric tires totaled 3,757,542, as compared with 3,167,978 in July, and 2,852,034 in August, 1923. The corresponding August production of these casings amounted to 2,733,575 against 2,187,116 in July and 2,355,915 in August of last year. Shipments during August of high pressure inner tubes totaled 5,250,579 compared with 5,084,015 in July and 4,350,329 in August, 1923, while August production stood at 4,588,385 as against 3,545,956 in July and 3,577,922 in August, 1923. In the August production of solid tires at 52,516, there is an increase of 10,018 compared with July and 4,375 over August, 1923. August shipments for the present year also show an encouraging increase, totaling 60,684 against 51,449 in July and 48,718 in August of last year.

INVENTORY—PRODUCTION—DOMESTIC AND FOREIGN SHIPMENTS OF PNEUMATIC CASINGS—INNER TUBES—SOLID TIRES

	Pneumatic Casings				Inner Tubes				Solid and Cushion Tires			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
Twelve months, 1922	..	58,401,086	30,698,139	29,221,899	..	72,463,938	38,137,181	36,656,435	..	2,320,650	786,603	688,845
Twelve months, 1923	..	67,448,419	33,933,936	32,991,810	..	87,807,770	45,128,083	43,554,963	..	3,013,674	692,148	690,090
1924												
January	56	4,808,084	3,220,292	2,838,570	51	6,720,247	3,887,959	3,542,500	10	182,782	53,604	47,295
February	55	5,265,133	3,278,674	2,866,626	50	7,339,307	4,067,631	3,397,668	10	188,519	60,646	52,965
March	57	5,763,084	3,427,692	2,990,872	53	8,157,704	4,218,950	3,500,105	10	203,608	68,662	61,482
April	60	6,164,226	3,307,478	3,013,441	54	8,627,343	4,035,242	3,586,279	10	212,419	69,534	58,486
May	58	6,331,193	3,038,586	2,769,970	53	8,761,812	3,744,108	3,648,490	10	219,538	63,901	60,267
June	55	6,155,537	2,629,742	2,753,143	51	8,166,158	3,493,431	3,964,609	10	212,704	50,887	58,716
July	52	5,138,474	2,552,329	3,561,110	49	6,634,022	3,857,289	5,392,253	10	202,850	42,498	51,449
August	52	4,477,016	3,234,741	4,193,114	48	5,758,310	5,015,687	5,619,914	9	183,159	52,516	60,684

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" prior to January, 1924, includes only stock forwarded to a purchaser and not stock forwarded to warehouse, branch, on consignment basis, or abroad. After January, 1924, shipments abroad are included in these figures.

(Compiled by The Rubber Association of America, Inc.)

was given to the desirability of cooperative educational and sales promotional consumer advertising to stimulate the sale of rubber goods commonly used in the home. No decision was reached with respect to this, however, and the matter will be considered at another meeting, when it is expected that a conclusion will be reached.

The Division also considered the standards for druggists' sundries adopted by the American Surgical Trade Association. With one or two minor exceptions, the A. S. T. A. program was found to be practically identical with the standards prescribed by the Rubber Sundries Division.

TIRE MANUFACTURERS' DIVISION. The regular monthly meeting of the Executive Committee was held at the Lotos Club, New York, N. Y., October 22. The chief topic of discussion was the manner in which the tire manufacturing industry can best take advantage of the results of the first year's study by the Bureau of Business Research, Harvard University, of accounting and merchandising conditions in the retail automobile tire and accessory field. Consideration was also given to the desirability of adopting a Manufacturers' Standard Warranty covering solid and cushion tires.

TIRE AND RIM ASSOCIATION REPORT OF RIMS INSPECTED AND APPROVED DURING SEPTEMBER, 1924

Size	Number	Per Cent
Clincher Rims		
26 x 3	7,555	0.4
30 x 3	75,203	4.2
30 x 3½	788,616	44.4
31 x 4	66,463	3.8
Straightside Rims		
27 x 3½	432	0.0
28 x 3½	39,439	2.2
29 x 3½	18,431	1.1
30 x 3½	194,747	10.9
32 x 3½	6,094	0.3
28 x 4	105,505	5.5
29 x 4	43,986	2.6
30 x 4	55,294	3.1
31 x 4	858	0.0
32 x 4	54,235	3.0
33 x 4	4,478	0.3
29 x 4½	21,880	1.2
30 x 4½	71,652	4.2
31 x 4½	29,754	1.7
32 x 4½	92,876	5.2
33 x 4½	217	0.0
34 x 4½	14,831	0.8
36 x 4½	20	0.0
30 x 5	33,146	2.0
31 x 5	31,289	1.8
33 x 6	56	0.0
Truck Rims		
30 x 5	2,710	0.2
34 x 5	8,916	0.5
32 x 6	5,832	0.3
36 x 6	4,830	0.3
34 x 7	499	0.0
38 x 7	548	0.0
36 x 8	354	0.0
40 x 8	255	0.0
Totals	1,781,011	100.0

MEXICO AS MARKET FOR RUBBER SPECIALTIES

According to the Department of Commerce, there is in Mexico a rapidly developing market for certain rubber specialties, such as rubber aprons, table covers, crib sheeting, certain lines of infants' wear, dress shields, men's trouser belts, etc. Foreign competition in rubber specialty lines is said to be unknown at the present time, as practically all such goods found in Mexico have come from the United States.

The present extent of the market is difficult to estimate, some dealers stating that the annual volume of trade along these lines for the whole republic would not exceed $25,000. It is believed that sales could be largely increased by intensive advertising campaigns in some of the leading Mexico City newspapers, or some of the trade journals printed in Spanish. At the present time the greatest demand is for rubber aprons for use in offices, homes, hospitals, manicurists' parlors, etc.

The Obituary Record

Secretary of Star Rubber Co.

On September 7 Orlando L. Weaver, formerly secretary of the Star Rubber Co., Inc., Akron, Ohio, died in Akron, having just returned from California, where he had been staying for the past four months in a vain effort to regain his health. Mr. Weaver, who died at the age of 47, had for more than twenty years been connected with the automotive and tire industries, having served the Goodyear organization for twelve years as branch manager in Cincinnati and New York, afterward becoming distributer of Willys-Overland and Pierce-Arrow cars in Cleveland.

O. L. Weaver

Associated with the Star Rubber Co. since its organization, Mr. Weaver had been secretary and sales manager, resigning his position, however, in July, 1922, because of poor health. During the war he served at Washington, D. C., on the War Industries Board, and at the time of his death was still connected with Battery A, First Ohio Light Artillery. He was a member of the following clubs: Cleveland Athletic Club, Auto Club, Old Timers' Club, Akron City Club, and Shaker Heights Country Club. He is survived by his widow and one son, who are residing in Cleveland, Ohio.

Head of Clifton Manufacturing Co.

William M. Tenney, head of the Clifton Manufacturing Co., Jamaica Plain, Massachusetts, died on August 27.

Mr. Tenney was born in Georgetown, D. C. While still a young man he was made assistant manager of the Washington banking house of Jay Cook & Co. Later he was cashier of the Security National Bank, of Minneapolis, Minnesota, and prominent in the social and business life of that city.

In 1902 he became interested in the Clifton Manufacturing Co. and was president and treasurer of the company at the time of his death. His residence was at 50 Commonwealth avenue, Boston, but he died at Wellesley Hills, Massachusetts, where he was staying for the summer. Interment was at Washington, D. C.

Mr. Tenney was a man of unusual character and was much beloved by all his friends and business acquaintances. His passing was a great personal loss to them. He is survived by a widow and two sons, David D. Tenney, living in Minneapolis, Minnesota, and Frank C. Tenney, of Duluth, Minnesota, both members of the firm of The Tenney Co.

Manager of U. S. Rubber Co.'s Footwear Division

After twenty-six years of service with the United States Rubber Co., 1790 Broadway, New York, N. Y., John F. Hassett, manager of the footwear department at the Detroit branch, died September 17, after a lingering illness. Executives of the company state that he has left a record of devotion to duty that has few equals. He is survived by his widow and three daughters.

GEORGE R. HOLDERNESS, 45 YEARS OF AGE, MANAGER OF THE Fiske Tire Store at 132 Fountain street, Providence, died suddenly in his office from heart failure about noon on October 17.

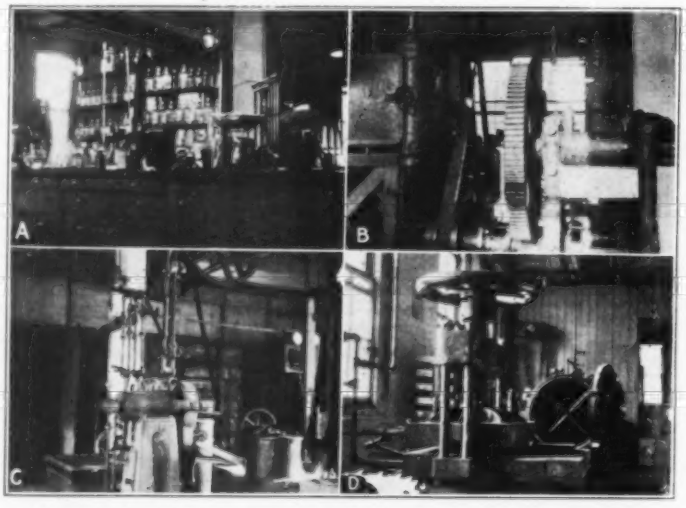
"PNEUMATIC TIRES," BY HENRY C. PEARSON. An encyclopedia of tire manufacture, repair, rebuilding, machinery and processes.

The Maywald Testing Laboratory

"CHEMISTRY is the primary element that governs successful manufacturing."

The truth of this quotation, displayed on the wall at the last chemical exposition in New York, is well illustrated in the work of the Maywald testing laboratory. This institution, established in New York City in 1889 by Frederick J. Maywald, has been devoted continuously for 35 years to the investigations of manufacturing problems. Shortly after it was established the laboratory was transferred to Bartow, Florida, the center of the pebble phosphate industry, and was the first organized chemical laboratory south of Charleston, South Carolina. In 1895 the laboratory was re-established in New York City in connection with the development of the first successful process for recovery of grease and fertilizer from garbage.

About this time Dr. Maywald became associated in business with Dr. Peter T. Austen. The firm devoted its attention exclusively to chemical problems of manufacturing, specializing in the improvement of processes and products, the utilization of wastes and in new industrial chemical applications. A few of the important subjects of investigation worked out by this laboratory include the following: Pebble phosphate; pegamoid pyroxylin fabrics; salvage of products from sewage, and the deresination of pontianak.



(A) Chemical Laboratory. (B) Washing Mill and Vacuum Drier. (C) Tubing and Cement Department. (D) Vulcanizing Department.

Rubber Investigations

The work on rubber problems, now so important a feature, began in 1904 with investigations on the deresination of pontianak.

Dr. Maywald succeeded to the sole management of the firm's laboratories on the death of Dr. Austen in 1907; and since that date the testing facilities of the organization have been enlarged steadily and modernized.

The new laboratory, located at Main and William streets, Belleville, New Jersey, is now one of the best equipped for consulting and testing work in relation to rubber and other manufacturing problems.

Rubber Making Equipment

In the group illustration are shown chemical laboratory A; and some of the rubber processing and manufacturing facilities, such as rubber washing rolls and vacuum drier B; the tubing machine and cement making churns C, and the vulcanizing room D. Other departments not illustrated here include the library, physical testing laboratory, and calender and mill room.

The exceptional testing facilities assembled in this laboratory are adapted to work in many industrial lines, as will be noted by their mere enumeration. Included in the rubber department are a Scott rubber tester, Riehle fabric tester, Mullen paper tester, plastometer; penetrometer, washer, vacuum drier, mixing mill, calender, tubing machine, press, dry heat and open steam vulcanizers, molds, mandrels, and miscellaneous appliances.

The equipment for other industrial branches comprises apparatus for large volume production of ozone, a quartz or ultra-violet ray lamp, extractors, churns, mixers, electric generators, high tension transformers, pulp beater and screens for paper making, electric furnaces and other electrical equipment, gas furnaces, calorimeter bomb.

The complete laboratory for analytical work is well stocked with supplies and research apparatus. Raw materials in variety are also carried for experimental manufacturing. High pressure steam and electric current are available as power.

Such an array of experimental and testing facilities under experienced and expert direction constitutes a valuable potential resource to manufacturers unable to finance the installation and operation of a private experimental and testing department.

POROSETTE RUBBER REDUCING GARMENTS

Rubber reducing garments of the general types recently referred to in this journal[1] have been greatly improved for the wearer by a change in construction, introduced by the originators of Nemolastic reducing garments.

The fundamental idea of reducing girdles and brassieres is to produce effective reduction. The introduction of rubber as the base of which these girdles and brassieres are made solved the problem. The rubber induces perspiration and the automatic gentle massage gradually eliminates excess fatty tissue. But inducing perspiration was not the final solution of the reducing process, for perspiration unless absorbed frequently causes irritation of the skin.

In order to eliminate this annoying feature it became necessary to find a means of disposing of excess perspiration. This was discovered experimentally in the use of a new fabric known as "Porosette," a circular knit material, soft, light, porous, and yet firm. These goods are brushed on the face side to raise a soft slight nap resembling that on canton flannel. The material is specially processed on the back to prevent the absorbed perspiration from coming into contact with the rubber ply.

On the opposite side the rubber ply is covered with silk glove stockinette as the outside of the garment. The Porosette in this three-ply construction not only performs the special function of absorbing perspiration but also adds distinctly to the strength of the combination fabric.

The style and finish of the garments of which this material constitutes the principal parts are greatly enhanced by the perfect matching in color of the rubber, Porosette, and silk facing, and their skillful combination and perfect vulcanization.

[1] THE INDIA RUBBER WORLD, August 1, 1924, p. 713-14.

REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

News of the American Rubber Trade

Rubber Industry Outlook

THE increase in manufacturing activity which became marked in mid-summer is still well maintained. Tire and tube production is proceeding on essentially capacity basis. The output of the Akron district is reported at upwards of 90,000 tires daily. The indications are that this rate will hold for the remainder of the year. Some plant expansion is developing to provide for increased capacity.

The steady rise in price of crude rubber from 18½ cents to 33 cents a pound during the past four months has curtailed the none too liberal margin of profit of tire manufacturers; therefore recent reduction of 3 to 6 per cent on prices of high pressure tires came as a surprise, since an increase has been generally anticipated.

The tire requirements for original equipment have declined quarterly this year, that for the third quarter being but 75 per cent of that for the first quarter. The total output of automobiles and trucks for nine months to October 1 is reported at 2,814,480. This is larger than the total of any 12 months on record, with the single exception of 1923. At 5 tires to the vehicle this output of cars required 14,072,400 tires as original equipment.

Balloon tires have become established as new equipment for 1925 motor cars as reflected in the increased output of balloon casings, which in August was 427,302 compared with shipments the same month of 369,335. Labor is plentiful at high rates while materials, other than rubber, are abundant at lower prices.

Rubber footwear and mechanical goods factories are being operated approximately at capacity and probably will continue so for the remainder of the year, as indicated by their commitments for manufacturing supplies.

Similar indications of the continuance of business in good volume are forecast in the current manufacturing activities in other rubber lines; as for example, in automobile topping, proofing for the cutting up trades, and heels. The latter are now being supplied on 90 per cent of men's leather shoes and rubber soles on 15 to 20 per cent.

The rubber industry, in common with business in general, is hopefully confident as to its general prosperity should the coming election result in the presidential choice by popular vote.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Firestone Tire & Rubber Co....	Com.	$1	Oct. 20	Oct. 10
Firestone Tire & Rubber Co....	6% Pfd.	1½% q.	Oct. 15	Oct. 1
Goodrich, B. F., Co.....	Pfd.	$1.75	Jan. 2, 1925	Dec. 20, 1924
Goodyear Tire & Rubber Co. of Canada	Pfd.	1¾% q.	.....	.....
Goodyear Tire & Rubber Co. of Canada	Def.	1¾%	.....	.....
Hood Rubber Co.	Pfd.	$1.75 q.	Nov. 1	Oct. 20
United States Rubber Co.....	1st Pfd.	2%	Oct. 31	Oct. 15

Akron Rubber Stock Quotations

Quotations of October 20, supplied by Otis & Co., Cleveland, Ohio.

	Last Sale	Bid	Asked
Firestone com.	87½	87	90
Firestone 1st pfd.....	96	96	97
Firestone 2nd pfd.....	93¼	...	93
General com.	225	...	...
General pfd.	96½	96½	...
Goodrich com.	29⅞	...	...
Goodrich pfd.	87	...	...
Goodyear com. V. T. C.....	14¾	14	14¼
Goodyear pfd. V. T. C.....	66½	64	...
Goodyear pr. pfd. V. T. C.....	95¾	...	...
Miller com.	85	87	90
Miller pfd.	101⅛	100½	101¼
Star com.	9	...	...
Star pfd.	30	...	...
*Swinehart, com.	16	...	20
Victor, com.	⅛	⅛	...
Victor, pfd.	...	...	...

*Unlisted securities.

New York Stock Exchange Quotations

October 22, 1924

	High	Low	Last
Ajax Rubber, com.	9¾	9	9
Fisk Rubber, com.	9¾	9⅛	9⅝
Fisk Rubber, 1st pfd.....	66¾	65	66⅜
Goodrich, B. F., Co., com.....	30⅞	29⅜	30¾
Goodrich, B. F., Co., pfd. (7).....	87¾	87½	87¾
Goodyear Tire & Rubber, pfd.....	68⅝	68⅛	68⅝
Goodyear Tire & Rubber, pr. pfd. (8)....	97½	97⅜	97⅜
Kelly-Springfield Tire, com.	17¾	17	17
Keystone Tire & Rubber, com.....	1¾	1½	1½
Lee Rubber & Tire, com.....	10⅞	10⅞	10⅞
United States Rubber, com.....	34¼	33¾	33⅞
United States Rubber, 1st pfd. (8).....	87	87	87

New Incorporations

Airtite Decoy Co., September 15 (Illinois), $50,000. Albert N. Vall, president, 122 North Washington avenue; Alan MacDonald, vice-president, 107 North Hazel street; J. E. McMillan, secretary and treasurer, 2 East Main street; Robert Bookwalter, director, 1004 North Vermilion street; W. T. Dunn, director, 1124 Sheridan street, and A. Deutch, director, 34 North Vermilion street, all of Danville, Illinois. Principal office, 14 West Madison street, Danville, Illinois. To manufacture rubber decoys.

Amanda Allen, Inc., October 15 (New York), 50 shares preferred stock $100 par value, and 50 shares common stock no par value. Incorporators: Eugene Christian, 171 West 71st street; N. W. Shefferman, 247 West 72nd street and M. S. Shefferman, 101 West 109th street, all of New York City. Principal office, Manhattan. Dealers in rubber merchandise.

Berkshire Rubber Co., of Mass., Inc., The, September 30 (Massachusetts), $7,500. Jessie F. Herbst, president and treasurer; P. Frank Herbst, vice-president and assistant treasurer, both of 16 Worthington street, and Jas. Rosenthal, clerk, 141 North street, all of Pittsfield, Mass. Principal office, East street opposite Court House, Pittsfield, Mass. To sell tires, tubes, auto accessories, and vulcanizing tires and tubes.

Blauvelt, Conklin Electric & Auto Co., Inc., August 29 (New Jersey), $125,000. Incorporators: Harvey H. Blauvelt, and Isabella S. Blauvelt, both of Ridgewood (R. F. D., Paramus Road), and Harry Conklin, 113 Kenilworth Place, Ridgewood, all of New Jersey. Principal office, Paramus Road near Grove street, Ridgewood, New Jersey. To manufacture and deal in electrical and automobile supplies.

Calumet Motor Co., September 8 (Illinois), $30,000. J. L. Helland, president, 11347 Stewart avenue; A. V. Becker, secretary, 24 West 109th Place; B. E. Nelson, vice-president, 24 East 109th Place, and J. H. Nelson, director, 11210 Eggleston avenue, all of Chicago, Illinois. Principal office, 10940 Michigan avenue, Chicago, Illinois. Retail distributers of new and second-hand automobiles and accessories.

Dutchess Tire Sales Co., Inc., October 21 (New York), $10,000. Incorporators: A. P. Luginbuhl, Malverne, Long Island, New York; A. William Lester, 564 West 188th street, and Frank Shapiro, 810 West 183rd street, both of New York City. Principal office, Poughkeepsie, New York. To carry on an auto and garage business.

Edelstone Bros. Fabric Mills, September 4 (Maine), 100 shares of common stock without a face or par value. William W. Edelstone, president; Harry Edelstone, treasurer, both of Portland, Maine. Principal office, Portland, Maine. To deal in a general manufacturing business of tire fabric, yarn and materials of all classes and description.

Farran-Oid Co., The, September 12 (Ohio), 250 shares without nominal or par value. H. C. Farran, president; C. E. Cook, vice-president; J. L. McKnight, secretary; J. W. Jordan, comptroller, and V. I. Montenyohl, treasurer. Principal office, Akron, Ohio. To manufacture, purchase, sell and deal in and with products of which rubber is the constituent part, and all raw material entering into the manufacture thereof, including automobile accessories.

Gold Seal Electrical Mfg. Co., August 29 (New Jersey), $50,000. Incorporators: John Klopok, 719 South 20th street; Andrew J. Struening, 170 Stuyvesant avenue, and Joseph Appel, 301 Hunterdon street, all of Newark, New Jersey. Principal office, 2-4 Nelson Place, Irvington, New Jersey. To manufacture and deal in electrical devices and auto supplies.

Jamaica Truck Tire Service, Inc., October 21 (New York). Incorporators: M. H. Guthrie, 237 South Grand avenue, Baldwin, Long Island; Sam Geiselman, South street, Jamaica, and Mae V. Hickey, 85 Globe avenue, Jamaica, all of New York. Principal office, Queens Borough, New York. Distributers of tires.

Lincoln Tire Co., August 15 (Illinois), $5,000. P. F. Murphy, president, and J. T. Murphy, sales manager. Principal office, 808-812 East Monroe street, Springfield, Illinois. Distributers of Falls tires and Evergreen tubes.

Martin Tire & Rubber Co., Inc., August 22 (Illinois), $1,000. M. C. Martin, president and treasurer; A. Painchaud, vice-president and L. Keenan, secretary. Principal office, 4417 Wentworth avenue, Chicago, Illinois. Manufacturers of Martin puncture proof tires and Martin air-cell tires.

New Protector, Inc., The, August 18 (New York), $5,000. V. M. Corvaglia, president; B. A. Palumbo, vice-president, and S. Palumbo, secretary, all of Brooklyn, N. Y. Principal office, 1435 Bushwick avenue, corner Chauncey street, Brooklyn, New York. Dealing in automobile accessories, mainly in Coffield tire protectors.

P. K. Tire & Sales Co., August 18 (Michigan), $3,000. P. Kenneth Dwyer, president; Joseph T. Weisenberger, vice-president; and Louise Dwyer, secretary and treasurer. Principal office, 11647 Kercheval avenue, Detroit, Michigan. Distributers for manufacturers of automobile tires, tubes and accessories.

Sauer, Inc., Edward W., October 6 (New Jersey), $100,000. Incorporators: Edward W. Sauer, 166 Ridgewood avenue, Newark; Robert A. Sauer, and George S. Sauer, both of 508 Jefferson avenue, Elizabeth, and all of New Jersey. Principal office, 109 Broad street, Elizabeth, New Jersey. To buy, sell, deal and trade in any kind of boots, shoes, rubber goods, tennis goods, hosiery and shoe findings of all kinds.

Turner Tire Co., The, June 11 (Arkansas), $25,000. Joe F. Turner, president; Perry Terry, vice-president; and K. A. Pritchard, secretary and treasurer, all of Pine Bluff, Arkansas. Principal office, 17th and Main street, Pine Bluff, Arkansas. Distributers of tires, tubes, accessories and Ford parts.

Tweedy-Mowe, Inc., September 25 (New York), $250,000. Incorporators: Avery McDougall; Emma Weinberg and Edgar E. Brill, all of 1775 Broadway, New York City. Principal office, Manhattan. To deal in tires and tubes.

Utah Rubber Co., July 3 (Utah), 50,000 shares of stock. David Neff, president; E. C. F. Hartman, vice-president, and Seth Chamberlain, secretary. Principal office, 160 South 10th West street, Salt Lake City, Utah. Manufacturers of heels, soles, matting, radio panels, and a few other mechanical goods.

The Rubber Trade in the East and South

The improvement noted a month ago in the demand for automobile tires has extended to other rubber lines as well and become further intensified in the case of tires and tubes. Some delay was experienced by tire companies in securing sufficient help and materials to handle the rapidly advancing manufacturing schedules. This difficulty being overcome, all companies both large and small are operating at virtually normal capacity. Tire prices, however, still continue low and profits are not all that they should be.

Rubber footwear factories are in active production on full tickets of goods for fall and winter service. Trade in heavy mechanical rubber goods lines is increasing with the improvement of conditions of industrial lines generally. Further activity will result when rubber equipment purchases are resumed on the part of the railway companies.

Rubber heel output has recently increased due to the general improvement in the leather shoe trade. Heel prices are extremely competitive and the business profitable only in large volume. Rubber flooring manufacture has become an established line with a score or more of rubber companies. Business in flooring is good and the product is increasing in favor with the users. Companies manufacturing garden hose are now engaged on goods for the 1925 season.

Superintendent of Endicott-Johnson Rubber Department

Associated for more than twenty years with the rubber industry, J. William Matthaei is at present superintendent of the rubber sole and heel department recently organized by the Endicott-Johnson Corporation, manufacturer of leather shoes at Johnson City, New York.

J. W. Matthaei

Mr. Matthaei was born in Marburg, Germany, and was educated in the high schools and university of that city. His first connection with the rubber industry began in 1900, when he secured employment with the Lichterfelde hard rubber factory, of Berlin. In 1909 he came to America, and the following year became associated with the United States Rubber Co., remaining with that organization until 1916. After serving for six years as superintendent of the Armstrong Cork Co., Mr. Matthaei in 1922 entered upon his duties of a similar capacity with the Endicott-Johnson Corporation. An illustrated account of the newly installed rubber sole and heel department established by the latter concern appeared in the September issue of THE INDIA RUBBER WORLD.

Tweedy-Mowe, Inc.

Tweedy-Mowe, Inc., with headquarters at 250 West 57th street, New York, N. Y., is a new national tire sales organization established by O. S. Tweedy and John V. Mowe, both widely known in the tire industry. The former was for a time identified with the Diamond Rubber Co., and the United States Rubber Co., while for the past three years he has been vice-president and general manager of the McKone Tire & Rubber Co., which latter

O. S. Tweedy

John V. Mowe

offices he will continue to fill. Mr. Mowe has been connected with the Firestone and Goodyear organizations, and more recently with the Kelly-Springfield Tire Co. as assistant manager, director and vice-president in charge of sales.

The new distributing organization will act as selling agent for several tire manufacturers, and salesmen will be stationed at various important points throughout the country. The first account taken on was that of the McKone Tire & Rubber Co., for all of whose products Tweedy-Mowe, Inc., will act as exclusive selling agents.

Manager U. S. Mechanical Sales

Walter Gussenhoven, who succeeds C. C. Case as manager of the United States Rubber Company's mechanical sales division, was born at Laramie, Wyoming, and spent his early years in the Far West. He was educated in the public schools of New York City, later going with his parents to Holland, where he took a three-year course in one of that country's engineering schools. Returning to New York in 1893, Mr. Gussenhoven was first employed in a carriage building establishment, his connection with the Revere Rubber Co. beginning in 1899, when he entered that concern's carriage tire department. In 1915 he was sent by the Revere organization to Chicago as branch manager and afterward served his company in various capacities. In 1920 he became manager of mechanical sales for the United States Rubber Co., his headquarters being at 1790 Broadway, New York, N. Y.

Southern Textile Exposition

The following organizations were included among the exhibitors at the sixth Southern Textile Exposition which opened October 20 at Greenville, South Carolina: Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin; the Barber Asphalt Co., Philadelphia, Pennsylvania; H. W. Butterworth & Sons Co., Philadelphia, Pennsylvania; the Cooper-Hewitt Electric Co., Hoboken, New Jersey; the Curtis & Marble Machine Co., Worcester, Massachusetts; Manhattan Rubber Manufacturing Co., Passaic, New Jersey; Mason Regulator Co., Boston, Massachusetts; National Aniline & Chemical Co., New York, N. Y.; Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pennsylvania; Stowe & Woodward Co., Newton Upper Falls, Massachusetts, United States Rubber Co., New York, N. Y.; and the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

Hodgman Equity Receivers Confirmed

At a preliminary hearing on October 15, Judge A. N. Hand appointed J. Newton Gunn and Gordon Auchincloss permanent receivers in equity of the Hodgman Rubber Co., Tuckahoe, N. Y. On December 10 the receivers will report concerning the plan for reorganization and the payment of creditors' claims.

The preferred stockholders have formed a committee headed by B. W. Jones, vice-president of the Bankers Trust Co. The other members are: J. A. Lowell Blake, of Blake Bros. & Co.; W. L. Chase, vice-president of the Yonkers National Bank & Trust Co.; R. B. Lanier, of Winslow, Lanier & Co., and A. V. Stout, of Dominick & Dominick. C. O. Cornell, 16 Wall street, is secretary to the committee.

The committee will study the affairs of the company, working in cooperation with the receivers, the creditors, and common stockholders. It is essential that the committee receive full support from preferred stockholders. The immediate deposit of stock with the depositary, Bankers Trust Co., 16 Wall street, New York, N. Y., is requested. The depositary will issue its transferable receipt for stock so deposited.

A preliminary report rendered by the receivers shows that considerable progress had already been made in effecting economies and in operating the business of the Hodgman company on a profitable basis.

Eastern and Southern Notes

Tallman & Habich, crude rubber brokers, removed their offices on October 3 to 25 Beaver street, New York, N. Y.

C. C. Case, formerly associated with the United States Rubber Co., 1790 Broadway, New York, N. Y., as manager of mechanical sales, has resigned, and has been succeeded by Walter Gussenhoven. For some time serving as vice-president of the Revere Rubber Co., Mr. Case has thus for a number of years been identified with the rubber industry.

About 3,000 feet of plain rubber tile have been installed in the women's beauty parlors on the third floor of the new Saks Building, 49th street and Fifth avenue, New York, N. Y. The tile represents one of the products of the Bonded Floors Co., Inc., a division of Congoleum Co., Inc., 35 West 45th street, New York, N. Y.

The Nulite Polish Co., Inc., 248-250 Plymouth street, Brooklyn, New York, is specializing in the manufacture of buffing and polishing compositions, for use with all metals, celluloid, hard rubber, etc.

The Spadone Machine Co., Inc., 15 Park Row, New York, N. Y., has completed arrangements to act as selling agents in the United States and Canada for the automatic machinery made by H. Monroe Smith, Passaic, New Jersey.

On October 15 W. H. Hendricks, general sales engineer of The New Jersey Zinc Co., 160 Front street, New York, N. Y., read a paper entitled "Zinc" before the Cooper Union Chemical Association and students of the chemical department. The New Jersey Zinc Company's 3-reel film, "Zinc Oxide for Use in Paint—from Mine to Save the Surface," was used by Mr. Hendricks to illustrate the lecture.

The Hartford Rubber Works Co., Hartford, Connecticut, a subsidiary of the United States Rubber Co., 1790 Broadway, New York, N. Y., is carrying on operations on a twenty-four hour basis, the plant being now run at full capacity.

The plant of The Norwalk Tire & Rubber Co., Norwalk, Connecticut, is operating at capacity, with no indications of any immediate need for curtailment. Executives of the organization include: William B. Miller, president; David Spence, vice-president and general manager; and F. L. Lamson, secretary and treasurer.

The Squires Carbonized Rubber Corp., 855-857 Broad street, Stratford, Connecticut, has been recently organized to manufacture vulcanized and devulcanized rubber products. Alfred Waklee is president, Nelson J. Waklee, treasurer, and Arthur C. Squires secretary. The Squires products include soluble devulcanized rubber for the carriage cloth and raincoat trade, rubber paving, and rubber heels.

William M. Gross, Carver Building, Sharon, Pennsylvania, manufacturer and jobber of rubber and textile specialties, has extended his line of production to include all kinds of rubber sundries and novelties suitable for the drug, department store, and mail order trade. The company is interested in receiving catalogs and complete information from all manufacturers of the goods mentioned.

The National Tire Co., Pittsburgh, Pennsylvania, is finding a good demand for balloon casings, the company handling Firestone products exclusively.

The Birmingham Tire & Rubber Co., 26th street and 27th avenue, North, Birmingham, Alabama, has been operating day and night since last May, while an increase in output of from 35 to 50 per cent over the previous month has been steadily shown each month. Executives state that the demand for their products has been continually developing, and a steady gain in sales for the next six months is anticipated. Lynne Murray is president of the Birmingham organization.

The Mason-Dart Supply Co., Inc., 218 Bibb street, Montgomery, Alabama, is the authorized distributer in central Alabama of a full line of mechanical rubber goods as manufactured by the Republic Rubber Co., Youngstown, Ohio. Executives of the distributing organization include: J. W. Mason, president; J. F. Hill, vice-president; and C. A. Dart, secretary and treasurer.

A complete line of Firestone tires is being carried by the 557 Tire Co., Inc., 813 Howard avenue, New Orleans, Louisiana, the distributing organization reporting much success in its sales of balloon casings.

A wholesale and retail business in tires, accessories, and automobile supplies is being maintained by The Heerwagen Brothers Co., Inc., Fayetteville, Arkansas. The company has also been recently appointed agent for its district by the General Tire & Rubber Co., Akron, Ohio.

The Rubber Trade in New Jersey

The rubber manufacturers of New Jersey have had no cause for complaint during the past month and report a good general demand for rubber products.

While some of the Trenton tire manufacturers are running to capacity, peak production has not yet been reached. It is stated in certain quarters that after spring dating has been completed there will be a better demand for tires and tubes. Manufacturers are somewhat disappointed over the demand for balloon tires and believe that production schedules will not be increased for some months.

The recent cut from 3 to 6 per cent in tire prices by western manufacturers has not been generally followed by Trenton makers, who apparently have no intention just at present of either lowering or raising prices.

Cotton and molded hose and other mechanical rubber goods are in good demand. Hard rubber manufacturers are elated over future prospects and report an active call for radio parts.

Proposed Purchase of United & Globe

A bid for the purchase of the plant of the United & Globe Rubber Corp., Trenton, New Jersey, has been made to the receivers by Peter Vredenburgh, of Freehold, New Jersey, who represents large interests. Receivers in equity, Edward C. Rose, of Trenton, and J. Philip Bird, of Plainfield, New Jersey, will submit the bid to the United States District Court at Trenton on November 3. If the

sale is approved by the court the company will take the old name of "United & Globe Rubber Co.," and ample working capital will be provided.

The new management believes the company can be made to pay good returns on the capital necessary to buy the assets of the corporation and provide sufficient working capital, and feels that the stockholders should be offered an opportunity to participate to a certain extent in the new lease of life of the business.

The United Globe & Rubber Corp. has had a long life and its product is widely known. There is not a railroad in the United States that has not used some product of the company in the equipment and maintenance of its rolling stock. The value of United & Globe goods was soon evidenced in the volume of orders received by the receivers.

John S. Broughton, who was connected with the company for more than 25 years, built up the concern to one of the largest rubber plants in New Jersey and was eminently successful during his management. In June, 1922, he disposed of his interests, which comprised the majority of the stock of the company, and a new syndicate took over the factory but was unsuccessful in operating it. The concern was not insolvent but was thrown into the hands of equity receivers.

Empire and Murray Operating at Capacity

While the Empire Tire & Rubber Corp. and the Murray Rubber Co., Trenton, New Jersey, are not so busy as during July and August they continue to operate at capacity. Despite predictions the demand for balloon tires has not been very great but there has been no decline in orders for high pressure tires. The spring datings, which become effective soon, will have a decided effect upon the tire and tube output and manufacturers are looking to this to cause a peak production. The Murray company is quite busy on molded and cotton hose and stationers' rubber bands.

Brake Lining Decision Reversed

Following a re-argument on October 27, the Court of Errors and Appeals, Trenton, New Jersey, reversed its previous decision and held that the Thermoid Rubber Co. and Johns-Manville Co. may not account for royalties on sales of brake lining and brake band lining manufactured under patent rights held by the Asbestos Brake Co. The royalty agreement was made in 1911 and provided for a 10 per cent royalty on all sales of the products manufactured under the patent.

The last decision reverses Vice-Chancellor Buchanan's first order compelling the accounting, and which originally was upheld by the Court of Errors and Appeals. This litigation was brought into court by Milford C. Massie, Brooklyn, N. Y., a stockholder of the Asbestos Brake Co.

The answers filed by the Thermoid and the Manville companies stated that the contract was binding only upon certain contingencies, which never eventuated; that Massie had lost his right to sue by remaining silent for eight years. It was also argued that the license agreement constituted a combination in restraint of trade in contravention of the Sherman Anti-trust Act; also that the Asbestos company had promised to protect the defendants against infringement of rival manufacturers, but this had not been done. The Asbestos company said this was because the royalties had not been paid. The Errors Court in reversing its previous decision declared that non-payment of the royalties was no reason for the Asbestos company not protecting the two other companies from infringing competition.

The litigation grew out of the patenting of brake lining by three men independently of each other, one of whom was William T. Bonner, of Trenton. Investigation was started concerning the priority of the inventions, and the two concerns, together with Conrad Hubert, holder of one of the inventions, entered an agreement to pool their respective resources so that conflict would be avoided.

New Jersey Notes

The Rubber Manufacturers' Association of New Jersey held its first fall meeting on October 6 at the Stacy-Trent Hotel, Trenton, New Jersey, when A. L. Viles, general manager of the Rubber Association of America gave an interesting talk on the rubber situation. Twenty members of the New Jersey association were present.

Fifty members of the Trenton Engineers' Club recently made a tour of inspection through the plants of the Thermoid Rubber Co. and the Stokes Asbestos Co., Trenton, New Jersey. William J. B. Stokes and Robert J. Stokes showed the engineers through the various departments in tire making and the manufacture of brake linings. In the Stokes plant they watched the asbestos weaving machines with interest as this is a comparatively new industry in Trenton.

The Thermoid Rubber Co., Trenton, New Jersey, reports a substantial business increase in both automotive and mechanical departments, with prospects for a good winter. Both tire and tube production have been much better during October than in September.

Business continues good at the plant of the Luzerne Rubber Co., Trenton, New Jersey, and a live demand for hard rubber goods continues. Radio parts are a big asset to the hard rubber business.

Business has shown a slight decrease at the plant of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, but this has been anticipated for some time.

Samuel H. Bell, of Reading, Pennsylvania, formerly president of the Nottingham Rubber Co., Trenton, New Jersey, will shortly begin the manufacture of bouncing rubber dolls. For the present they will be made at the Pierce-Roberts Rubber Co., Trenton, New Jersey.

The Ajax Rubber Co., Trenton, New Jersey, announces that business has been so good during the past two months that it has been impossible to accumulate any stocks. The new inner tube "Gaspac" is making good and orders are coming in rapidly from all sections of the country.

Ray H. Paddock, sales manager of the Murray Rubber Co., Trenton, New Jersey, has returned from an extensive trip through the west and northwest, visiting Chicago, Kansas, Minneapolis and other points.

The Trent Rubber Co., Trenton, New Jersey, continues to operate at capacity and announces that there is no change in prices in sight. The company has not yet begun the manufacture of balloon tires.

Ernest C. Stahl, receiver of the Spartan Rubber Co., Yardville, New Jersey, has received offers for the purchase of the plant but will ask the United States District Court for permission to put up the factory at public sale. A petition in involuntary bankruptcy was recently filed in the federal court against the Spartan company by attorneys for creditors.

The Vulcanized Rubber Co., Morrisville, Pennsylvania, is busy in every department. During the past year many large orders for radio parts were executed and the demand became so great that the company was compelled to build a large addition, which was recently placed in operation. The company is also receiving many orders for hard rubber combs.

The Fisk Flap Rubber Tube Co., with offices in Camden, New Jersey, will erect a plant at Trenton, for the manufacture of inner tubes exclusively. The first unit will be of brick, one story, 150 by 50 feet. Paul H. Wendell, 17 East State street, Trenton, New Jersey, vice-president of the company, will select a site for the new plant.

The company was organized more than a year ago to manufacture a tube patented by C. Francis Fisk, secretary of the company. The tubes are now being manufactured in Trenton. Mr. Fisk was formerly superintendent of the old Zee Zee Rubber Co., and was

one time member of the rubber firm of the Fisk-Dunham Co., Yardville. C. H. Read, Washington, D. C., is president of the Fisk Flap Rubber Tube Co., while Kelsey Moore, Collingswood, New Jersey, is secretary.

E. B. Pierson, formerly sales manager of the Converse Rubber Co., Malden, Massachusetts, is now handling the Snag Proof line in the New England States for the Lambertville Rubber Co., Lambertville, New Jersey.

Thomas H. Thropp, president and general manager of the Trent Rubber Co., Trenton, New Jersey, has retired from that concern and is now devoting his time to the Trent Tire Co. Inc. He has been succeeded by his brother, Frank W. Thropp, while Charles F. McCoy has become vice-president. H. J. Connelly is now assistant treasurer and a director, while Newton A. K. Bugbee continues as secretary and treasurer.

The Combination Rubber Co., Trenton, New Jersey, is considering the installation of additional heaters and other equipment. Recently the concern opened eighty new accounts and announces a higher distribution than the previous month. The company continues to operate twenty-four hours a day and has many orders on Viking tires.

The Rubber Trade in Rhode Island

Rubber manufacturing business at the Rhode Island plants is in a somewhat unsettled condition, especially the footwear branches. The latter concerns have been closed down practically ever since last spring and the present outlook is not considered especially encouraging. The shoe division of the National India Rubber Co. at Bristol, which was closed for three months, resumed about the first of October with a working schedule of five days per week. About 2,800 persons constitute the working force in this division, about three-fourths of whom are now employed.

Consultations and conferences have been held during the past month between representatives of interested employes and Edward I. Cooper, manager of the National India Rubber Co., with regard to the order of the rubber company issued several months ago, that out-of-town employes of the factory in order to retain their positions must become bona fide residents of Bristol. There are about 167 employes who live in the adjoining town of Warren where many had bought homes, some of them under mortgage, and to dispose of the properties and remove to Bristol would entail considerable hardship. Manager Cooper has taken the matter under advisement to see what can be done to straighten it out.

A. O. Bourn's 90th Anniversary

Augustus O. Bourn, Rhode Island's oldest living former governor, the "Grand Old Man" of the rubber industry and one of the oldest men actively engaged in business in this State, celebrated his 90th birthday on October 1. The former governor travels 38 miles by train and automobile six days a week from his home, "Seven Oaks," on the shores of Narragansett Bay at Bristol, to the offices of the Bourn Rubber Co., in Providence, of which he is the controlling figure. Besides undertaking the organization and management of several companies in the manufacture of rubber and rubber products, he has combined a successful business career with military affairs, politics, literature, and rubber chemical research. His experiments in this latter field have resulted in reducing the time in vulcanizing processes from fourteen hours to fifteen seconds.

Mr. Bourn was born in Providence in 1834. After his graduation from Brown University in 1855, he became associated with his father, George O. Bourn, a pioneer rubber manufacturer in Providence. After his father's death in 1859 the son developed the Providence Rubber Co., and the National Rubber Co., the two concerns being merged later. For a time Mr. Bourn gave up active business and travelled extensively in Europe with his family. After his return he founded the Bourn Rubber Co.

Mr. Bourn said on his birthday that he was well, "but not as strong as formerly." He ascribes his condition to "as simple a life as I can possibly lead; early to bed and late in getting up, combined with a plain diet; but chiefly owing to the mercy of the Almighty. For thirty years, six days a week, I have made the trip to my office in Providence, leaving Bristol usually on the 10:20 train and arriving home at 6 in the evening. I estimate that by this daily commuting I have travelled about 342,000 miles, or nearly fourteen times around the world."

Rhode Island Notes

The Columbia Narrow Fabric Co., at Shannock, which makes elastic webbing for arm bands, garters and men's wear, is preparing to install 100 more braiding machines in the Rocky Brook or Peace Dale branch of the concern, says General Manager George Clark. The Peace Dale plant, formerly the Gripper Tip Shoe Lace Manufacturing Co., which was purchased by the Columbia Narrow Fabric Co. only a few months ago, now employs about thirty hands. The Shannock plant, the main one of the concern, is now running fairly well and is on full time, employing 220 hands out of a normal force of 250 hands, says Mr. Clark. The product is silk, cotton, wool and mercerized silk rubber or elastic webbing, much of which is made into a popular brand of garters.

The Carolina Co., which has been manufacturing specialized headlinings at Carolina, Rhode Island, for the Ford Motor Co., Detroit, is slowing up on production owing to a slackness in the demand for the product. The working force has been reduced by 30 or 40 employes. The Carolina company has executed some half a dozen contracts with the Ford company and has turned out more than 400,000 yards of the material, which is used in sedans and coupes. Manager William Hinchliffe, of the Carolina company, states that he expects the company will resume with a full force of employes as soon as the new fall business begins.

In the annual tax assessment for 1924 in the town of Charlestown, the Columbia Narrow Fabric Co., is assessed on a property valuation of $67,300.

The Horseshoe Tire Sales Co., 36 Franklin street, Providence, is owned by Lillian L. Ryan, of East Providence.

Abe L. Sheinberg and Albert Pilavine are the owners of the Providence Tire Rebuilding Co., 100 Broadway, Providence.

Among the taxpayers of the city of Cranston who are assessed this year upon a property valuation of $20,000 or more are the following: Atlantic Tubing Co., $67,270; Arch Narrow Fabric Co., $21,950; estate of William B. Banigan, $49,400; Hill & Lacross Co., $35,575, and Thomas A. Lacross, $23,630.

HIGH PRESSURE TIRE PRICE CUT

A reduction of from 3 to 6 per cent in the prices of high pressure tires was announced on October 15 by the Firestone Tire & Rubber Co., Akron, Ohio, such action being immediately met with a similar reduction on the part of the Goodyear and United States rubber companies. Other important concerns soon falling into line included the Goodrich, Fisk, Miller, and Kelly-Springfield, while the Lee organization met the proposal with an advance in prices of from 5 to 10 per cent.

It is believed that some of the smaller companies which have been operating during recent months on a slender margin of profit may be seriously affected by this latest move, particularly as crude rubber is now selling at a new high price for the year, around 32 cents a pound, while there are indications that it will reach a considerably higher price before the end of the year. Although reasons for the action by the Firestone company have not been issued, it has been stated by some authorities that it was the result of attempts to meet competition in connection with the semi-balloon types of casings, a line which the Firestone company does not produce. The present reduction does not, however, affect the prices of balloon tires.

The Rubber Trade in Massachusetts

The belief grows that the presidential election is all over except the shouting. This is having a good effect on general business, already improving in response to seasonal demand.

This is a busy time in rubber footwear factories, and although jobbers and retailers have not altogether abandoned the policy of buying more nearly as they want the goods, manufacturers have little to complain of regarding the orders booked, and are operating on full or practically full tickets. Leather footwear output continues active and with it production of rubber heels, soles, cement and findings.

Tire production and soles are good. Dealers' stocks are considerably lower than a year ago and being replenished, as it is being found that balloon tires are not seriously curtailing the demand for standard cords. The big drop in gasoline prices in New England will tend to prolong the pleasure driving season as long as the weather permits. Low prices and high costs are giving tire manufacturers some concern.

Mechanical rubber goods sales keep pace with improving industrial activity. Building operations and insulated wire demand have as yet been little affected by approaching cold weather. The call for automobile topping is somewhat less. Production of druggists' sundries and weatherproof clothing increases.

Boston Woven Hose & Rubber Co.

Gross sales of the Boston Woven Hose & Rubber Co., Cambridge, for the year ended August 31, 1924, amounted to $8,892,780, as compared with $10,814,375 for the preceding year, showing a decrease of 17.8 per cent. Orders during September were received not only in large numbers but in increased volume, and material increases in sales and profits during the coming year are anticipated by George E. Hall, president of the company.

The annual report lists total assets and liabilities amounting to $7,411,652. Current assets are given as $3,621,387, against current liabilities of $816,453. Plant assets are $3,660,563; surplus, $1,485,647; reserve for future depreciation, $59,550.

Hood Rubber Products Co. Enlarges Branch Personnel

Following its annual tire sales convention, held during the week of September 22, the Hood Rubber Products Co., Inc., Watertown, Massachusetts, announced some important changes in branch personnel, as follows:

C. F. Buchanan has been appointed western district manager, with headquarters in Chicago, Illinois.

C. V. Criswell has been appointed southern district manager, with headquarters in Atlanta, Georgia; and the eastern district will be supervised by E. A. Bishop, who is also sales manager of the Hood tire division.

B. F. Egan, who formerly directed the Hood branch at Grand Rapids, Michigan, is now branch manager at Chicago, Illinois; while I. M. Hanscomb becomes manager at Grand Rapids. R. F. Miller, formerly in charge at Seattle, Washington, is now branch manager at San Francisco, California; and G. B. Brown, formerly in charge at Dallas, Texas, has been appointed branch manager at Cleveland, Ohio. Hugh Rust has been promoted from the Los Angeles branch to take charge of the Dallas, Texas, branch; G. D. Caraway has been appointed branch manager at Atlanta, Georgia; and V. F. Wagstaff was made manager of the Memphis, Tennessee, branch.

The company reports an encouraging increase in both sales and production during the last six months, while the outlook for the future is also very promising.

Another Tire Fabric Mill Goes South

The sale at auction of the Warner plant of the New England-Southern Mills at Newburyport furnishes concrete evidence of the difficulty of producing certain cotton products in Massachusetts. The Warner mill was equipped with 25,000 spindles for the manufacture of tire yarn. This is a branch of the textile industry which has become centered in the South.

The property has been stripped of its equipment, which has been shipped to Georgia and installed in the new Stark Mills of the New England-Southern Mills. The Stark Mills are running full and sold ahead into the new year.

The New England-Southern Mills will also sell at auction the plant at Leroy, New York. This mill was a small producer of tire yarn, having 10,000 spindles. This machinery has also been shipped to the Stark Mills of the company in Georgia.

Buses Replacing Trains and Trolleys

Not only are rubber tired motor buses replacing many discontinued trolley lines in Massachusetts, as has several times been noted in this column, but they have begun to replace railway service on unprofitable branches. A large 25-passenger bus costing $7,200 is now operating on the Ashburnham branch, Fitchburg division of the Boston & Maine Railroad. Seven round trips are made daily, the fare each way being ten cents.

The parlor car autobus service of the Eastern Massachusetts Street Railway between Boston and Lowell, via Cambridge, Arlington, Winchester, Woburn, Burlington, Billerica and Chelmsford, was inaugurated October 1. Twenty trips will be made week days and eighteen Sundays. The fare is $1.

Massachusetts Notes

The partnership heretofore maintained under the name of M. Norton & Co., Medford, Massachusetts, was dissolved on September 30 by common consent. James E. Norton will, however, assume the obligations of the former company, and remaining in the same location will continue to carry on the business of dealing in used rubber mill machinery.

The Acushnet Process Co., New Bedford, Massachusetts, specializing in refined rubbers, announces that John A. Lyon, the company's former representative at Akron, Ohio, has made other business connections and is no longer associated with the Acushnet organization. No provision for a successor to Mr. Lyon is being contemplated.

The annual meeting of the National Association of Cotton Manufacturers will be held November 12 and 13 at the Copley-Plaza Hotel, Boston. The general topic under discussion will be manufacturing and selling cotton goods, and a program of good addresses is being arranged. The social features include a cabaret dinner with entertainment and dance on the evening of November 12 and a banquet the following night, at which L. F. Loree, president of the Delaware & Hudson Railroad will be the principal speaker. John S. Lawrence, of Lawrence & Co., Boston, will be chairman of the session devoted to "Studying the Market."

The Quabaug Rubber Co., North Brookfield, has recently put on the market a new tan composition soling which is the result of a year's experimenting and tests, and which has proved its quality with that of the firm's well-known carbon black sole. It is being made in soles in the different irons from 9 to 12, also in sheet soling and toplifting stock.

The Bristle Stretcher Co., Mansfield, Massachusetts, manufacturer of cloth handling machinery, has taken over the business and patent rights of the Mansfield Machine Shops, also of Mansfield. Thomas J. Southern, who for a number of years has been connected with the old organization, becomes treasurer of The Bristle Stretcher Co.

Dr. R. S. Quinby, service manager of the Hood Rubber Co., Watertown, Massachusetts, was among the speakers at a recent conference of the American Management Association and the Industrial Relations Department of the Associated Industries of Massachusetts. Following a report on the "Cost of Service Activities," by Royal Parkinson, Dr. Quinby presented some extremely interesting statistics on the cost of installing health activities in industries and of maintaining them after they were established.

The Rubber Trade in Ohio

Akron Tire Manufacturers Reduce Prices

A slight falling off in the recent heavy demand for pneumatic tires, which became noticeable early last month, was followed with an announcement by the Firestone Tire & Rubber Co. of a reduction of 3 to 6 per cent in prices of high pressure cord and fabric casings. Notice of the price revision was sent to dealers in connection with the regular spring dating announcement. The change became effective October 20. Other large tire manufacturers, including the Goodyear Tire & Rubber Co. and the Miller Rubber Co., met the Firestone cut with announcement of similar reductions.

Officials of the Firestone company explained that the latest price reduction was made in order to bring the pneumatic tire prices in line with a previous reduction of balloon tires. The balloon tire line was revised downward in midsummer, but no change was made at that time in the price of pneumatics. Firestone, as usual, was the leader at that time in the price cutting.

In the face of advancing cost of crude rubber and fabric, announcement of a tire price cut came as a surprise in Akron. It has been freely predicted by many tire manufacturers and salesmen that the next price revision, if any, would be upward.

While there is no longer the urgent demand from motor car manufacturers and retail dealers that continued through August and September, the larger rubber plants are producing more than 80,000 tires a day, it is estimated, in the Akron district. Most factories are operating on a three-shift basis.

The demand for rubber footwear, mechanical goods and rubber novelties is reported good.

Akron Convention Plans of N. T. D. A.

It is expected that more than 1,500 retailers will be present at the fifth annual convention of the National Tire Dealers' Association, which will be held in Akron, Ohio, November 18, 19 and 20 inclusive. A program of much interest has been prepared, and all sessions will be held in the Akron Armory, a building having a seating capacity of 2,500. The Rubber Association of America, and practically every tire company in the Akron district has cooperated with the dealers, at least to the extent of giving publicity to the convention. George J. Burger, president of the National Association, has also extended a general invitation to dealers in all sections of the country to be present and participate in the discussions.

General Tire and Rubber Co.'s Activities

Work is being rushed on construction of more than $100,000 worth of new factory buildings at the plant of the General Tire & Rubber Co., Akron, Ohio. Tire production will be substantially increased when the additions are completed about the first of the year, it is reported. Space is being provided for a new mill and calender room and more room for tire building and finishing operations. This is the second addition built by General in the past two years. Despite its large earnings, the company has always pursued a conservative policy, and has carefully avoided any danger of over expansion. Officials of the company explain that the factory, with its present facilities, has not been able to keep pace with the growing demand for its products.

More balloon tires, particularly in the larger sizes, will be built with six plies of fabric next year, officials of the General company told their salesmen at a conference held in Akron October 15, 16 and 17. Investigation has shown that the addition of two or more plies to the balloon tire makes a tougher, longer wearing carcass, but at the same time detracts in no way from resiliency in large size tires. The only difference is that the six-ply 30x3 1-2 balloon tire is slightly less resilient.

One hundred salesmen, from all over the country, attended the General conference. Announcement was made at this time that on account of being behind in orders the company could not take on new dealers within the next 30 days as demand from present dealers is said to be greater than can be supplied.

Cleveland Worm & Gear Co. Builds New Plant

The Cleveland Worm & Gear Co., which since its organization in 1912 has been located at Fortieth street and Payne avenue, Cleveland, Ohio, moved during October into its new plant, also in Cleveland, and situated at Eightieth street, south of Kinsman avenue. The first unit of the new construction comprises a one-story building, having a total floor area of 45,000 square feet and costing approximately $200,000. The new plant has also been thoroughly equipped with special machinery for hobbing worms and generating gears.

Executives of the organization include: A. H. Clark, president; Howard Dingle, vice-president and general manager; M. L. Thomson, second vice-president; H. C. Robinson, treasurer, and A. C. Blair, secretary.

Super-Zeppelin Planned for Transcontinental Service

Plans to construct a Zeppelin airship of 5,000,000 cubic feet—twice as large as the ZR-3, the largest ever designed—have been announced by Paul W. Litchfield, vice-president and general manager of the Goodyear-Zeppelin Corporation, Akron, Ohio. Working plans for this ship, which will be designed especially for transatlantic service, will be begun immediately upon arrival of Dr. Karl Arnstein, chief of design of the German Zeppelin Corporation. Dr. Arnstein is expected to leave Germany in two weeks with a staff of twelve designers. Among other executives already stationed here is Captain Ernst A. Lehmann, vice-president of the Goodyear-Zeppelin Corporation, who piloted the ZR-3 on its record-breaking trip across the Atlantic.

The B. F. Goodrich Co. Reports Good Progress

The third quarter of the year has been one of the best in the history of the company, both from a standpoint of volume of business and earnings, according to officials of The B. F. Goodrich Co. Although the demand for tires has slackened somewhat, business is expected to be almost as good in the last quarter. Efficiency has been increased by the introduction of new methods and machinery, and overhead has been substantially reduced, it is reported. Several changes have been made among executives and heads of departments.

A new bead making department with improved machinery of the latest design has just been installed at the Goodrich plant. By eliminating many operations production is said to have been considerably increased. More work can now be turned out with fewer employes.

Tire production at Goodrich has been running from 5,000 to 6,000 tires a day better than the record made during the early part of the year, when approximately 18,000 tires a day were being manufactured. The company is also making large quantities of beads for the export trade. A good market is reported for rubber footwear and mechanical goods, of which this company is one of the largest producers in the United States.

Dr. Geer Severs Official Connection with Goodrich

After seventeen years of service with The B. F. Goodrich Co., Akron, Ohio, Dr. William C. Geer, vice-president in charge of research, has announced the severing of his official connections with that organization, although he will continue to be of assistance in an advisory or consulting capacity.

Dr. Geer has been responsible for many of the Goodrich products, the officials of the company also attributing to him much of the development of rubber and its adaptation in recent years to both commercial and personal uses. During the war Dr. Geer was frequently referred to as the "father of the gas mask," as his study helped to render such masks efficient, while he also developed a number of other articles used by the government for war purposes.

As a recognized authority in rubber chemistry Dr. Geer's reputation is well established, while his *Reign of Rubber* is a volume of literary and educational value. Formerly holding the position of instructor in chemistry at Cornell University, Dr. Geer became connected with the Goodrich organization in 1907, and for the past eight years he has directed the company's research and development work.

Ohio Notes

The Star Rubber Co., Akron, Ohio, has since its organization in 1907 several times enlarged its plant, at the same time increasing the company's output and capitalization. Executives of the company are: L. H. Firey, president; R. L. Robinson and W. A. Humphrey, vice-presidents; J. W. Desseker, secretary and assistant treasurer; R. G. Shirk, treasurer and assistant secretary; and J. A. Christie, factory manager. Directors include the abovementioned executives, with the exception of Mr. Shirk, and also Francis Seiberling and William A. Boesche.

The Lambert Tire & Rubber Co., Akron, Ohio, specializing in the manufacture of "Trublpruf" tires, has been operating continuously and maintaining a night and day schedule since February, 1922. Additional factory equipment has now been ordered, the installation of which by January 1, 1925, will result in exactly doubling the plant production. G. M. Collette is general manager.

The Goodyear Rubber Plantations Co., with main offices at Akron, Ohio, was incorporated under the laws of the state of Ohio on September 13, 1924, and capitalized at $6,615,000. The object of the new organization is to operate rubber plantations in Sumatra which for some time in the past have been idle.

Factory sales for June of the present year by The Mohawk Rubber Co., Akron, Ohio, have been 63 per cent greater than for the corresponding month of the year previous, while there is in particular an increased demand for the company's heavy duty pneumatic truck tires.

The India Tire & Rubber Co., Akron, while not planning any extensive expansion program, is considering the construction of a 3-story addition to its factory, the new building to measure 80 to 96 feet by 60 feet.

For the first time in the last 10 years the plant formerly operated as the Avalon Rubber Co. and later as the Marlinite Rubber Co., in Barberton, is showing a profit, according to officials. The reorganized company, which took over the Marlinite Rubber Co. a year ago is operating under the name of the Sun Rubber Co. An addition has just been started to the factory in order to take care of increased business. The company manufactures surgeons' rubber goods, rubber chair cushions, rubber rugs for bathrooms, and small molded rubber specialties of all kinds. The volume of business is nearly twice that done during the same period last year.

Trump Bros. Rubber Co. Akron, Ohio, is now the largest producer of rubber belts in the United States. The factory is turning out belts at the rate of 50,000 a day, and the company expects to increase this number in a short time.

B. M. Leisure, formerly associated with the Firestone organization, is now a member of the sales staff of The General Tire & Rubber Co., Akron, Ohio.

"Miles" fabric and cord tires are being manufactured by The Miles Tire & Rubber Co., Akron, Ohio. R. P. Johnson is president.

The Gewert Manufacturing Co., Durbin Place, Avondale, Cincinnati, Ohio, is, as successor to the Cincinnati-New York Tire Co., engaged in the manufacture of a complete line of vulcanizing machinery for tire repair shops. The following are the executives of the Gewert organization: Arthur C. Gewert, president; Walter Morton, vice-president; and Edwin R. Gewert, secretary and treasurer.

Sohngen and Bischoff, doing business at 1129 Race street, Cincinnati, Ohio, as The General Tire Co. of Cincinnati, reports having handled General tires exclusively for the past seven years.

The manufacturing facilities of the Aetna Rubber Co., 811-815 East 79th street, Cleveland, Ohio, have been increased by a recent addition to the Cleveland plant, and at the company's Ashtabula property additional buildings are to be erected to house a new steam generator plant. It is expected that the new constructions will be completed in about three months, when more vulcanizing equipment will be installed. The company manufactures molded hard and soft rubber products, wrapped goods, and such dipped goods as electricians' and household gloves. S. T. Campbell is general manager.

The Columbus Tire & Rubber Co., Columbus, Ohio, has opened a wholesale and retail branch at Fourth and Spring streets, Columbus, under the management of C. P. Landerbaugh, formerly district sales manager of the Lancaster Tire Co. Business of the Columbus company during 1924 has shown an increase of substantially 35 per cent over 1923. A number of new dealers throughout the southern and middle states are now handling the company's products, which include both standard and balloon tires. John W. Zuber is president.

The Independent Tire Co., 111 East Gay street, Columbus, Ohio, which since February, 1913, has been doing business as a jobber and retailer of tires and tubes, has opened a branch establishment at 289 Main street, also in Columbus, where tires, tubes and accessories will be carried. Merwyn R. Hatch is president and treasurer of this sales organization, which handles Goodyear, Goodrich, United States, Lancaster, and Kelly-Springfield products.

Under new management the Ohio State Tire Co., 6114 Euclid avenue, Cleveland, Ohio, reports an advance of approximately 20 per cent in sales for September, with prospects for still further increases during the coming months. A. W. Gillespie has been recently appointed general manager of this distributing organization, which carries Goodyear and United States tires exclusively.

The Henderson Tire & Rubber Co., Goodale Boulevard, Columbus, Ohio, has opened four new direct factory branches at Chicago, Atlanta, Kansas City, and New York, where a complete supply of Henderson "Classic" and "Dominant" cord tires, as well as inner tubes will be carried. A branch organization is also being established at Columbus, Ohio, in charge of H. W. Dillon, as director of sales. Additional molds and other equipment are soon to be installed at the Henderson plant, where tire sales have reached the highest point in the company's history.

A specialty is made by The Eclat Rubber Co., Cuyahoga Falls, Ohio, of radiator hose, as well as cab tire for coaster wagons and baby carriages. At the present time plant operations are going forward at capacity, with indications that peak production will continue for the remainder of the year.

The Champion Rubber Co., Cuyahoga Falls, Ohio, specializes in the manufacture of inner tubes, and has just completed a two-story brick building which will double the plant capacity. Maximum production is to be continued for some time to come. E. F. Ast is treasurer.

Full production is now maintained at the new plant of the Defiance Rubber Co., Defiance, Ohio. The principal product is hard rubber dust, and also hard rubber sheet for those who wish to do their own grinding. The company will also do grinding for those who wish to use their own soft and hard rubber scrap. Charles L. Kinther is in charge of operations at the new plant.

The business of the Mason Tire and Rubber Co., Kent, Ohio, has shown a great increase in recent months, and plant operations are at capacity both at the Bedford factory and at Kent. C. H. Williams, formerly connected with the Goodyear organization, is now vice-president of the Mason company, and is in charge of branch sales.

The Columbia Tire & Rubber Co., Mansfield, Ohio, is enjoying the best business in its history, production being maintained on a twenty-four hour basis. The daily ouput has been approxi-

mately 1,200 tires and 2,500 tubes, and all indications are that this production will be continued during the next few months. S. D. Isaly is secretary and treasurer.

The Hammond Rubber Co., Massillon, Ohio, is a new organization, which manufactures "Herald Brand" toy balloons and plans to begin the manufacture of bathing novelties and other specialties shortly. S. W. Hammond is general manager of the company.

James Moore Eckels has been appointed receiver for the Reed Rubber Co., 1156 Dorr street, Toledo, Ohio, manufacturer of toy balloons. It is the intention of the court and receiver to sell the entire equipment. Mr. Eckels has for the past eight years been the Toledo branch manager for the Ohio Rubber & Textile Co., 854 Spitzer Building, Toledo, Ohio, which organization maintains factories at Cleveland and Willoughby, Ohio, and Huntington, Indiana.

The factory of the Excel Tire & Rubber Co., Wadsworth, Ohio, was bought by The Studebaker-Wulff Rubber Co., Marion, Ohio, on February 11, 1924, and production has been maintained by the new owners since that time. At present the Wadsworth plant is operating at full capacity and running night and day, the output including automobile tires, trouser belts, rugs, and various sundries. The receiver was discharged some weeks ago.

The Rubber Trade in the Midwest

Vail Rubber Works Erects New Factory

A modern factory building is being erected by the Vail Rubber Works, St. Joseph, Michigan, which will occupy the new plant about November 1. With increased facilities there will be opportunity for the expansion of the molded goods and roll covering departments, the covering of rolls with rubber representing the company's specialty. W. A. Vail, who heads the organization, has been engaged in the rubber business for nearly thirty years, and formerly operated a rubber factory in Chicago. Four years ago the Vail company purchased the equipment of the Palmer Tire & Rubber Co., also of St. Joseph.

Industrial Advertisers' Convention

At a meeting of the National Industrial Advertisers' Association which was held at Chicago, October 13 and 14, a number of sales executives representing important industrial organizations either read papers or led in the discussions which followed. Among these officials were: J. C. McQuiston, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania; and R. E. Conder, Boston Woven Hose & Rubber Co., Cambridge, Massachusetts.

Midwest Notes

Among those making addresses at the annual convention of the American Foundrymen's Association, held in Milwaukee, Wisconsin, from October 13 to 16 were J. F. Harper and H. J. Stein, of the Allis-Chalmers Co., who spoke concerning "The Microscope as a Controlling Instrument in Annealing Steel Castings," while at a special session in connection with the duties of employers and executives H. S. Falk, of the Falk Corporation, made an address on "The Milwaukee District Program."

The Lee Tire Co. of Arkansas, Little Rock, Arkansas, is a subsidiary of the 555 Tire & Service Co., also of Little Rock, the former organization having been for two years a distributer of Lee casings as well as various rubber goods.

About November 1 The Standard Four Tire Co., Keokuk, Iowa, began the production of 5,000 inner tubes a day, having recently more than doubled the plant capacity. The daily output of tubes was formerly estimated at 2,400, while the tire capacity per day is approximately 1,400. A. E. Verner is general sales manager.

At the convention of the National Association of Stationary Engineers, held during the week of September 8 in Grand Rapids, Michigan, a booth was devoted to a display of the products of the United States Rubber Co., special emphasis being given to mechanical goods and footwear. Considerable attention was drawn to a display of a standard "U. S." rubber expansion joint which was recently used at the Morgan & Wright plant in a competitive test with a copper joint.

The Sullivan Tire & Rubber Co., an organization handling Brunswick, Goodrich, and Empire tires, has now become installed in larger quarters at Eleventh and State streets, East St. Louis, Illinois, where the company has secured better facilities for service.

The Terre Haute Tire Jobbers, Twelfth street and Wabash avenue, Terre Haute, Indiana, is handling a complete line of Miller tires, and is also maintaining a Miller warehouse for two counties of the state.

The Natrona Tire & Radiator Shop, Casper, Wyoming, has considerably increased its floor space in order to care for growing business. Prospects for the future are said to be excellent.

The State Tire Co., Inc., 2206 Locust street, St. Louis, Missouri, is a distributer of Kenyon cord tires and tubes.

The Rubber Trade on the Pacific Coast

A note that struck a responsive chord among rubber men on the Pacific coast, especially the many engaged in tire making and selling, was the announcement a fortnight ago by several of the largest makers of casings in the country that not only was the "tire war" over but prices would be immediately advanced. The news came as a great relief to large and small dealers, who for several months past have had all they could do to make ends meet on the small profits in sales. The latter have as a rule been very much larger than for a corresponding period a year ago, but the net gains have been much less. "Gyp" business was undoubtedly hit hard by the sharp price cut on standard makes, but unfortunately many deserving dealers were unwittingly punished incidentally.

Stimulated by the rise in raw rubber, prices of reclaimed rubber and rubber substitutes have tended to advance lately, and the market is broadening as many new uses are being found for these products. On most compounding ingredients there has been as yet but little upward revision in prices. Dealers in tire repair materials expect a better market for their wares now that tire prices are advancing.

Branch managers and jobbers handling various rubber products made by eastern and midwestern factories report trade good, but that a great many buyers, for some obscure reason, want to wait until after the national election before placing orders. Dealers in druggists' sundries complain that profits are being sharply cut in competition with the nationally-known chain stores, some of which, it is said, are even handling "quality goods" at cut rates and in increasing variety. Recent rains roused the rubber shoe market appreciably, and representatives of eastern factories are confident now that the season's orders will go well above the low figure of 1923. Rubber hose and other supplies for oil fields, refineries, transportation, and retail service are once more in fair demand.

The Coast Tire & Rubber Co. Reorganized

Not only has The Coast Tire & Rubber Co., Oakland, California, been taken out of the hands of a receiver, but it has declared the first dividend in its history. The operation of the factory has shown a profit of $13,321.95 over all costs from May 22 to August 30, 1924. Much credit is given to the officers of the reorganized concern, who are: President, J. C. Hughes, Oakland; vice-president, Louis S. Budo, Fresno; secretary and treasurer, E. H. Russell, Oakland; directors, J. C. Hughes, L. S. Budo, F. E. Miller, J. A. Silveira, and O. B. Caldwell. The factory manager is M. B. Reynolds, for many years in the same capacity with the Fisk and Hood rubber companies.

The new concern acquired not only the property and equipment of the old company, but also assumed its debts totalling $168,746.27, which, when deducted from an official appraisal of $530,274.27, left the net cash value of the new company's equity as $361,528. This latter sum, represented by 36,153 shares of second preferred stock at $10 a share and with an equal number of common shares of no par value, was used in paying for the plant, and the stock will be apportioned among the holders of preferred shares in the old company.

Tires Built While Customer Waits

A steady increase in production is reported by the Bra-den Tire & Rubber Co., which operates an exceptionally well-equipped tire and tube factory at Norwalk, a Los Angeles suburb. The company also reports good progress in marketing equipment for manufacturing Wayne-way tires in eight states adjacent to the Coast and in a territory having over 20,000 tire dealers. The outfits, which are leased, consist of a cord reel and warmer, a tubing machine to rubberize the cord, a machine to form and bias-cut the weftless fabric, five collapsible tire molds, and a steam vulcanizer. Cord and rubber compound are supplied from the Norwalk factory. Tires can be made while a customer waits and at a very low price, it is stated. The apparatus and process, invented by Bert N. Wayne, of Santa Monica, California, were described in THE INDIA RUBBER WORLD, September 1, 1923. The company's offices in Los Angeles are at 425-7 W. Pico street.

Jack Tire & Rubber Co., Adds New Equipment

A substantial increase in business is the experience in the past few months of the Jack Tire & Rubber Co., Spokane, Washington, according to R. H. Newell, vice-president and manager. Many new selling agencies have been established recently in Washington, Idaho, Montana, and Oregon, and a direct factory branch is doing well in San Antonio, Texas. The factory is now averaging 200 casings and 400 tubes daily, and a fortnight ago received two carloads of mold and core equipment from the East for making a "second line" cord tire in sizes from 30 by 3 1-2 to 5 inch, inclusive. The smallest tire, full oversize, air bag cured, is made to retail at $9.50. The factory is turning out a complete line of balloon tires, and for the production of the latter and standard cords the working crew will soon have to be doubled.

Road Tests of Pneumatic and Solid Truck Tires

An interesting test is being made by truck owners of the comparative advantages of solid and pneumatic tires. About 4,500 loads of sand, gravel, and crushed rock are moved into Los Angeles daily from the neighboring San Fernando Valley, and trucking concerns have been very anxious to find means of moving these materials faster, since they can not move more at a time on account of the 24,000 pound load limit.

The truck owners trying out pneumatics have found that they can make more frequent trips, that the tires are easier on the roads and, by cushioning the car, lessen repair bills. But as unfavorable factors they note that the crown of most roads is so great as to cause excess weight to be thrown on the outer tires, thus shortening their life; punctures and blowouts are troublesome and time-wasting; pneumatic mileage appears to be less than two-thirds of solid tire mileage; and the cost of the inflated tires is said to average $150 more than the solids.

Pacific Coast Notes

A large increase in business in specialty lines and a steady growth in output of hose, belting, and standard molded goods is reported by the Universal Rubber Manufacturing Co., 938-958 Harrison street, San Francisco, California, of which George M. Stevens is president. The company has lately added a 12-foot vulcanizer for large open heat work, and a new duster, a grinding apparatus, and new lathes to facilitate the handling of various kinds of rolls. A new institution at the plant which is bringing in many new accounts is an engineering department for the benefit of present and prospective customers.

J. B. Brady, general manager of the coast branches of the United States Rubber Co., with headquarters at San Francisco, finds general business in all company departments considerably ahead of last year's total for a like period. He presided over a mid-month conference of branch managers, and plans were outlined for a record-breaking sales campaign during the winter.

Average daily production of the Los Angeles Goodyear plant for mid-October was 5,000 casings and 8,000 tubes, with a prospect of this average holding up well into the winter. Production in tires and tubes is much beyond the October outturn in 1923, and the output of tire repair materials is also much higher. Labor is ample and of good quality. Membership in the Goodyear Relief Association is steadily growing. By means of group insurance, the company gives each member of the association a $1,000 benefit payable at death, and adds $500 more after five years' membership. John W. Maple, representative of the president, has returned from executive conferences in Akron and New York.

Business with the Reilly Rubber Co., 2432-34 E. 56th street, Los Angeles, California, has recently been so good as to warrant the erection of another unit to the plant. Work on it will be started this month. Production of tubes, in which the company specializes, now averages 1,400 daily and the selling market is now confined wholly to this country, instead of partly overseas as heretofore. The company is planning to manufacture high grade golf balls, for which there is a rapidly growing demand on the Coast.

The Webster-Brinkley Co., Seattle, San Francisco, and Portland, dealers in machinery and mechanical rubber goods, and who are also Pacific Coast selling agents for the Gutta Percha & Rubber Manufacturing Co., New York, N. Y., have established a branch at 303-5 E. Third street, Los Angeles, California; I. Boyd in charge.

Southern California Branch Manager J. B. Magee of the United States Rubber Co. recently returned to Los Angeles from a business trip up the Coast. He reports company business throughout the entire Southwest as considerably ahead of the same period last year, all lines sharing well in the gain.

The Pacific Coast Golf Ball Co., with factory and offices at Loma Vista avenue and Fiftieth street, Los Angeles, California, is said to be the first concern west of Chicago to engage in the production of golf balls. Modern equipment has been installed and operations began about September 1. Executives of the organization include: F. M. Greenough, president; William C. Peters, secretary and treasurer; and E. P. Querl, sales manager.

A well sustained demand for various mechanical rubber goods is reported by the Eno Rubber Co., 1026-1032 S. Los Angeles street, Los Angeles, California. One specialty which is meeting with particularly good success is the Ride-air cushion disk for automobile springs, over 100,000 being sold last month.

The Dawson Tire & Rubber Co. has moved from 622 South Figueroa street to larger quarters at 1324 South Hope street, Los Angeles, California, where it has approximately 11,500 square feet of floor space. The organization specializes in vulcanizing and the handling of tires, and maintains a night and day service. B. G. McAbery is manager.

Much success in handling Firestone truck tires is reported by the Ernest W. Ingalls Tire Co., Westlake and Denny Way, Seattle, Washington. The distributing organization claims that this success is due not only to carrying an excellent line of goods, but also to studying the needs of the consumer, and properly advertising the products handled. Frank A. Jackson is sales manager of the Ingalls company.

That solid cushion tires can often be used as advantageously as pneumatics in carrying fragile loads is being demonstrated by the Milk Transportation Co., Seattle, Washington, which has equipped a fleet of trucks with glass-lined tanks for transporting milk in bulk from dairy farms to a city creamery.

The Rubber Trade in Canada

As previously mentioned in these columns the average shoe retailer handling rubbers has a habit of leaving his rubber selling to the caprices of weather changes, when by a small effort he might create a steady movement in this particular line. It should not be necessary to wait until snow, rain and slush create the annual rush for rubber goods. A number of local concerns keep close tab on the weather reports and adapt their advertising in advance. One shoe retailer out in Western Canada hit on a novel expedient for stirring up trade by advertising that he will allow ten per cent off the selling price of any pair of rubbers or shoes in his store if purchased while it is raining and explains that he would rather give his customers the benefit of his investment in rain insurance than the large insurance companies. The idea "caught on" and has resulted in satisfactory business.

Sport goods promise even greater development than last season. A feature in both men's and women's lines in this class is the growing popularity of the crêpe sole, which is illustrated and mentioned in practically every catalog printed this year by rubber footwear manufacturers and those jobbing athletic sports wear.

With winter not far distant, building construction will naturally show a decline. This likewise applies to the sale of tires, which is not as heavy in the fall months as during the early spring and summer. A large amount of transmission belting has been sold of late. The approach of cold weather has the tendency to increase the volume of sales in druggists' sundries such as hot water bottles and similar commodities.

Canadian Goodyear Declares Preferred Dividend

Some time ago C. H. Carlisle, vice-president and general manager of Goodyear Tire & Rubber Company of Canada, Ltd., Toronto, Ontario, said his company was in a position to pay off arrears on preferred shares, but did not desire to do so then for some special reason. However, preferred shareholders have just received dividend checks of 3½ per cent, made up of the regular quarterly dividend of 1¾ per cent and a payment of 1¾ per cent on account of arrears of 10½ per cent.

Accompanying the checks was a letter from Mr. Carlisle stating that the company closed its business for the current year on September 30 with a satisfactory profit, considering the general depression of business and keen competition. The company had no indebtedness except current bills that are not due for discount and no money had to be borrowed in the fiscal year just ended. During the year a material addition was made to the surplus and reserve accounts and the company is in a strong cash position. The year ending September 30, 1923, showed 18.34 per cent earned on the preferred. The arrears remaining total 8¾ per cent.

Heel Prices Reduced

Slightly lower prices have been issued on rubber heels made by the Gutta Percha & Rubber Ltd. The new prices are as follows:

Per dozen pairs:
Black or Tan—Men's Scoop, $2.35; Women's, $1.85.
Black or Tan—Men's MX or G. P. flat heels, $2.10; Women's MX or G. P. flat heels, black or tan, $1.70.
Black or Tan—Men's ⅞" Tenax whole heels, $2.65; Boys' ¾" Tenax whole heels, $2.35.
White heels, add 25c. per dozen pairs.

Canadian Notes

W. P. Thompson, manager of the Tire Exchange, Ltd., Winnipeg, Manitoba, representative for the Dominion Tire Co., in that city, states that the call for low pressure tires has been very good. Since handling this casing the Tire Exchange has equipped seventy-five or more local automobiles with balloons.

Witchell-Sheill Co. of Canada, Ltd. Windsor, Ontario, has recently brought out a new indoor bowling shoe with a composition rubber and fabric sole. The demand for this particular model is good throughout Canada, as well as other lines of athletic footwear which they manufacture.

The Rhino tennis and outing shoes for 1925 are illustrated in somewhat unusual fashion by a large broadside catalog printed in three colors which has been sent out to the trade by Ames Holden Tire & Rubber Co., Ltd., Kitchener, Ontario. Crêpe soles and also Rhino rubber are featured in this broadside.

The catalog of "Gutta Percha" outing shoes manufactured by Gutta Percha & Rubber, Ltd., Toronto, Ontario, for the 1925 season is a characteristic and comprehensive publication. In addition to the regular line, crêpe soles and Rugaten soles are featured.

Charles A. Joselin, of the Panther Rubber Co. Ltd., makers of rubber soles and heels, Sherbrooke, Quebec, sailed recently from New York for England on a business trip in the interests of his firm.

The Quebec Rubber Co., Ltd., Quebec, capitalized at $1,500,000, has purchased a 14-acre site and buildings in Quebec and will make them suitable for the manufacture of rubber goods. The company has secured the Canadian manufacturing and sales rights for the King Tire and the King molded leak-proof tube, and also proposes to manufacture druggists' sundries, garden hose, rubber heels, etc. The following are the directors of the company: Arthur Barbeau, A. P. Dechene, Alex Bestien, Frank Byrne, H. M. Richardson, Lacasse Rousseau, A. E. Bernier, and M. Madden.

Fenton Keirstead is the newly appointed manager for the Truro, Nova Scotia, branch of the Kaufman Rubber Co., Ltd. Kitchener, Ontario.

Coutlee-Muir Rubber Co. Ltd., has been incorporated to manufacture, purchase, import, sell and deal in rubber and rubber products. The head office is to be in Montreal and the capitalization is $20,000.

The Goodrich Tire Sales Co., Ltd., Winnipeg, Manitoba, has revived its charter, changing the corporate name of the company to that of P. K. Clarkson Co., Ltd.

Many of the new models of Tipperary shoes for athletic and summer wear for the season of 1925 showing a wide variety of outing goods are featured with crêpe soles, the product of the Columbus Rubber Co., Ltd., Montreal.

Catalogs have been issued by the Independent Rubber Co., Ltd., Merriton, Ontario; The Northern Rubber Co., Ltd., Guelph, Ontario; Kaufman Rubber Co., Ltd., Kitchener, Ontario; all of which contain illustrations of new models with crêpe soles.

A late issue of *Foot Prints*, the house organ of the Dominion Rubber System, Ltd., Montreal, constitutes the catalog of Fleet Foot summer shoes for 1925. In 24 pages, with an appropriate cover design, it illustrates the Fleet Foot line, emphasizing the outstanding features, crêpe sole specialties and lower priced staples.

AMERICAN & CONTINENTAL CORPORATION

The period of inflation through which Germany has just passed, having left the industries of the country practically without working capital, a corporation has been formed in America for the purpose of bringing such industries through loans, to a more normal condition. The new concern which is undertaking this rehabilitation is to be known as the American & Continental Corporation, and with an initial subscribed capital of $10,000,000, it has been organized by a group of financial interests under the auspices of the International Acceptance Bank, Inc., and Kuhn, Loeb & Co., with Dillon, Read & Co., and their associates. Similar assistance in due course to important interests in other European countries is contemplated.

The Rubber Trade in Europe

Great Britain

SOME interesting statistics regarding the world's consumption and supply of crude rubber have been lately appearing in certain English publications, and these official figures coming from various sources all approximately coincide in their optimistic statements as to the future of the industry.

Sanderson & Co., in a weekly market report, also made the following estimate:

"The position, so far as can be ascertained by figures at hand up to the present, points to a consumption for 1924 of 470,000 tons minimum and to a production of 400,000 tons maximum, which means a reduction in world's stocks of 70,000 tons at least. The improvement in general trade in America and elsewhere, coupled with the advent of the balloon or low-pressure tire, which has apparently come to stay, presumes a steady increase in consumption which is expected to last over 1925."

Quoting from the *Financial Times*: "The statistical position in the commodity is stronger than it has been for years past, while the indications of an improving trade demand, not only from the United States but also from the continent of Europe, encourage the belief that the producing industry has now turned the corner."

In *The Rubber Quarterly*, a publication prepared in London by a firm of produce brokers, the statement is made: "It is difficult to take an unbiased view in a matter which will probably remain the subject of keen controversy for years to come, but it seems fairly safe to say that in the rubber 'crisis' of 1924 restriction has been a factor of minor importance. The market has been constantly under speculative influence, highly nervous, and liable to be disproportionately upset whenever the holding-off policy of buyers caused weak holders to liquidate comparatively small stocks. In other words, the unsatisfactory features of the last quarter must be ascribed not to an increase in production but to a definite falling-off in demand . . . . . The world's visible stocks have fallen from about 245,000 tons to somewhere around 220,000 tons during the last six months. In so far, in fact, as restriction has aimed at restricting, it appears to have been fairly successful. Exports from Malaya and Ceylon have certainly been reduced, and although those of the Dutch East Indies show some increase, economic factors have prevented any undue exploitation of the self-denial of British estates. Exports of native-produced rubber are undoubtedly tending to increase at a somewhat alarming rate, and probably local conditions are favorable to this development. It is also to be doubted whether the tightening up of the preventive service has done much to stop the smuggling of Malay rubber to the Dutch East Indies. On the whole, however, figures afford abundant evidence that world production of crude rubber has recently been contracting, not expanding."

Institution of the Rubber Industry

The first meeting of the fourth session of the Institution of the Rubber Industry was held September 1 at the Engineers' Club, Coventry street, Piccadilly, London, Fordyce Jones, chairman of the Reliance Rubber Co., Limited, presiding. The chief address on this occasion was made by G. Stafford Whitby, professor of organic chemistry at McGill University, Montreal, Canada, whose lecture before an interested audience had as its subject "The Acidity of Raw Rubber." Previous to this address a few remarks were made by W. F. V. Cox, organizing secretary, who referred to the program for the coming sessions, and also mentioned the growth of the Institution, the total number of members now being 602, an increase during the year of 112. The Foundation Fund, according to the Institution's report, reached on August 31, 1923, a total of £1,007 5*s.* 6*d.*, while donations received or definitely promised now amount to £2,093 17*s.* 2*d.* Although this result is satisfactory further appeals will also be made during 1924-25, as the activities of the Institution largely depend upon the provision of adequate funds. Mr. Cox's report also stated that the past session had proved one of progress in both membership and funds, and that various outstanding debts on account of preliminary expenses had during the period been paid off. Mentioning the completion of the plans for establishing a diploma in rubber technology, Mr. Cox said that he believed that this diploma scheme would help the Institution to gain prestige and membership, and that with the vigorous support of all members the sessions of the coming year should prove of interest and profit.

In introducing the speaker of the evening, Fordyce Jones made the statement that "if ever there was an institution that was being run in the general interest, without any one-man domination, it was the Institution of the Rubber Industry." In this organization, he said, there was a tremendous opportunity for young men to give the very best in them, and not only would they be giving to their industry, but they would be doing something which would reflect to their own interests. The Institution was growing rapidly to a position in which all its members could offer something. Having an intense faith in the ability of the younger men in the industry, he was sure that a call to them to help the work would not be in vain.

On September 29 the first annual general meeting of the London and District Section of the Institution of the Rubber Industry was held at the Engineers' Club, Coventry street, London, W. 1, Oswald Latham presiding. Previous to the election of officers a report on the formation and progress of the London Section was rendered by Dr. T. J. Drakeley, head of the department of chemistry and rubber technology at the Northern Polytechnic, and honorary secretary of the London and District Section of the Institution. Dr. Drakeley stated that he considered the new policy of forming local sections to take charge of their own affairs has been a wise one, which he believed would result in increasing interest on the part of each member and a corresponding growth of the organization itself. As the London and District Section would comprise more than half the total membership of the Institution, great developments under present conditions were anticipated.

The following were elected for the year 1924-25: Oswald Latham, chairman; H. Standring, vice-chairman; and Dr. T. J. Drakeley, honorary secretary. The remaining thirteen members of the committee represent some of the leading rubber manufacturing interests of Great Britain.

Dunlop Capital Reorganization Scheme Adopted

On September 26 the Dunlop Rubber Co., at a meeting in London, formally adopted a capital reconstruction scheme which it is hoped will serve to clear away some of the difficulties with which this organization has long been contending.

"The company's report for the 18 months ended December last showed, after allowing depreciation and interest, a net profit of £1,451,800, or at the rate of £967,900 per annum. Under the reconstruction scheme there will be £1,000,000 of 6½ per cent "A" preference capital requiring £65,000, a like amount of 7 per cent "B" absorbing £70,000 and £2,400,000 of 10 per cent "C," the dividend on which will amount to £240,000. Preference charges in all, therefore, will aggregate £375,000 per annum, which, on the basis of recent earnings, would leave a surplus of £592,900 on 12 months' trading applicable to the reduced ordinary capital of £4,963,800, or nearly 12 per cent.

"Of course, reserves will need attention, and the methods of meeting preference arrears now decided upon may involve the

creation of new debentures, of which £1,000,000 is authorized; but, even so, it is evident that prospects opening out before the ordinary shareholders are more encouraging than they have appeared for a long time past."

In commenting upon the proposed scheme Sir Eric Geddes, chairman of the organization, said in part:

"I am not going to prophesy, as the rôle of a prophet is always a dangerous one, but I can tell you without hesitation that if conditions remain as at present—namely, the volume of sales and prices—the rate of profit revealed in the last accounts submitted to you will not only be maintained but improved upon in spite of keener competition.

"The increases in the sales of the company's products are being more than maintained, and the volume of business this year is again substantially higher than it was last year, which was a record year.

"The development of business, however, is not confined to this country. The sales in France are higher than they were last year, and we have every reason to look for further increases, as our quality in France is equal to Dunlop standard quality, and is being more and more appreciated. The output and sales of the German factory are increasing, and satisfactory prices are being obtained. Our general export business shows a most remarkable expansion, and I am glad to say that this is fairly well spread over all our markets.

"Since we last met I have had an opportunity of again visiting the large and important Dunlop factory at Buffalo, in which you have such a big investment, and I can at once say how gratified I was to find such a splendid spirit of enthusiasm and enterprise there. The sales in America are increasing, and I came away full of hope for the ultimate success of this venture. This is a particularly welcome impression, because, as you know, your company is not only a large investor in the American company, but is also the guarantor of that company's bond issue, both principal and interest, and is therefore its whole-hearted backer. Apart altogether from the direct results from this factory, I am sure that we shall benefit not only here, but in France and Germany also, from being in closer contact and competition with the work of the American factories."

British Notes

The Trojan Manufacturing Co., Limited, registered as a private company with a capital of £5,000, will carry on the business of manufacturer, seller, importer and exporter of hydraulic and other fitting presses and machinery, rubber machinery, tire rims, foundation bands, etc. The manager and secretary of the organization is W. T. Nichols, 109 Jermyn street, London, S. W. 1.

At the recent annual meeting of the Leyland & Birmingham Rubber Co., Limited, the chairman reported excellent operating conditions throughout the year at the Leyland and Mitcham works, while the London, Birmingham, Manchester, Cardiff, Newcastle-on-Tyne and Dublin branches had all shown very satisfactory results. Profits were also reported from the Calcutta and Buenos Aires divisions, as well as from that in South Africa.

Although the rubber paving experiment which was tried out some months ago on a business street of Bradford proved unsuccessful, due to extremely heavy traffic, it is proposed to give the idea another trial. Accordingly about 50 yards of rubber paving are now being installed on Leeds Road, another of Bradford's business streets, the present paving being of one solid piece instead of rubber blocks as in the first experiment.

Austria

The Austrian Fair at Vienna was fairly successful and a number of European countries were represented in the capacity of exhibitors and buyers. Among the former were England and France, with a good showing of rubber toys and novelties; Italy and Russia, with an unimportant exhibit of footwear and small items in the surgical goods lines; and Germany. The showing of rubber goods was complete and competition rather keen. Here again it was discovered that German prices were too high and reductions had to be made in various lines.

Belgium

Manufacture Belge de Tissus Elastiques has been formed to manufacture and deal in all kinds of elastic fabrics. The headquarters are at Deynze and the capital is placed at 1,500,000 francs.

Another new Belgian concern is Etablissements Ebena, capitalized at 2,500,000 francs. The aim of the company is to manufacture and trade in all kinds of plastic and insulating materials.

France

Société Industrielles des Téléphones

The rubber factories of the Société Industrielles des Téléphones date back to 1828 when the firm of Rattier was founded. In 1882 the Société Générale des Téléphones, of which the Société Industrielle is a continuation, acquired the Rattier concern. Later the rubber factory established by M. Menier at Grenelle was acquired. In 1907, a special factory was equipped to manufacture waterproof apparel, rubber footwear and accessories, and finally the factory of the Continental at Clichy was also acquired. The products of this concern include, besides the above-named items, technical rubber goods.

The Société Industrielles des Téléphones has a factory at Paris for making telephone and telegraph apparatus; works at Bezons and Calais for electric cables and at Levallois-Perret, a factory for electric apparatus.

Etablissements Delamotte

One of the oldest industrial firms in France is Etablissements Delamotte, A. Plisson, Successeur, Paris. The house of Delamotte was founded in 1789 for the manufacture of surgical instruments molded of so-called gum elastic, which was cotton or silk covered with numerous layers of oxidized linseed oil. This material was entirely satisfactory but some years later Dr. Nelaton suggested replacing this substance by rubber. The Delamotte firm adopted the improvement but the old gum elastic was not entirely abandoned, as there are certain advantages attached to its use in instruments like sounds, baugies, canules and the like. In 1904 M. Plisson acquired the firm and extended the use of rubber for sounds, drains, and the like. His manufactures have a high reputation in the trade.

French Notes

The Société d'Applications Nouvelles du Caoutchouc S. A. N. C., is a new concern formed to manufacture and sell rubber goods, particularly to exploit the inventions of the Draullette processes concerning the utilization of rubber. Headquarters are at 124 rue de Tocqueville, Paris. The capital is 500,000 francs.

Etablissements Pennel et Flipo has been established to manufacture and sell pharmaceutical specialties, dermoplaste, rubberized fabrics and rubber goods. Offices are at 58 due de l'Espérance, Roubaix. The capital is 900,000 francs.

La Plastose, with offices at 45 boulevard Saint-Martin, Paris, is capitalized at 3,050,000 francs, and will manufacture and sell all kinds of articles of plastic materials or other chemical products.

Germany

The German Rubber Industry

In the *Gummi-Zeitung* the German rubber industry is reviewed from its inception in 1829 to 1924, a period of almost one hundred years.

In 1829 François Fonrobert established a factory for making elastic fabric after a patent obtained in 1828 by J. N. Reithoffer in Vienna concerning the making of durable rubber thread by

braiding wool, cotton or silk over cut raw rubber thread. The discovery of vulcanization was followed by a succession of new firms, chief among which were H. Rost & Co. (1848), Vereinigte Berlin Frankfurter Gummiwaren-Fabriken in Berlin Lichterfelde (1849), Harburger Gummi-Kamm Compagnie (1856), now Kautschukwerke Dr. Heinrich Traun & Söhne. In the same year was founded the firm now known as Harburger Gummiwaren-Fabrik Phoenix A.-G., Harburg un-der-Elbe, and in 1862 the firm that later became Hannoversche Gummiwerke Excelsior A.-G. Hannover-Limmer. Franz Clouth, Rheinische Gummiwarenfabric A.-G., Köln-Nippes, traces its beginnings to the year 1864. In 1868 there were recorded 36 German rubber factories with a staff of 1788 persons.

After 1871, development was much more rapid and extensive. In that year the Continental Caoutchouc und Gutta Percha Compagnie was founded and also the Nordgummiwerke A.-G., Berlin (formerly Norddeutsche Gummi- und Guttaperchawarenfabrik Fonrobert & Reimann). The Peters Union A.-G., Frankfurt-am-Main, dates back from 1872, while the A.-G., Metzeler & Co., Munich; Rheinische Gummi-und Celluloidfabrik, Mannheim; and the New York-Hamburger Gummiwaren-Compagnie were all founded in 1873.

By 1875 there were 111 German rubber factories giving employment to 5,495 persons; in 1895 the numbers were 339 works and 12,514 employes. The post-war figures were: 1919, 195 factories, 21,000 employes; 1920, 210 factories, 32,000 workers; 1921, 215 factories, 42,000 workers; 1922, 220 factories, 54,000 workers; 1923, 240 factories, 52,000 workers, and the middle of 1924, 230 factories and 40,000 to 45,000 workers. The post-war records of workers do not include the number of office workers, salesmen, etc., which was between 4,000 and 8,000.

The development of the industry is further illustrated by the consumption of crude rubber, which rose from 19,329 quintals in 1872, value 19,000,000 gold marks, to 240,113 quintals, value 221,376,000 gold marks in 1910, as well as by export figures which rose from 34,652 quintals, value 25,143,000 gold marks in 1890 to 205,098 quintals, value 135,014,000 gold marks in 1913.

German Imports and Exports

The *Gummi-Zeitung* compares German imports and exports of rubber and rubber manufactures during 1913, 1922, 1923 and the first half of 1924.

Selecting the items of greatest interest we find that in the first half of 1924 imports of tubes for motor vehicles were 64 quintals against 17 quintals in the year 1923, 29 quintals in 1922 and 1124 quintals in 1913. On the other hand exports during the same periods were 1,037, 3,237, 2,547 and 3,568 quintals respectively. The relation of import and export figures of tubes for other vehicles was similar, the actual figures being: imports in 1924, 24 quintals; 1923, 10 quintals; 1922, 6 quintals; 1913, 340 quintals; exports 6,947, 16,636, 18,405 and 19,297 quintals, respectively.

Tire imports for all vehicles came to 698 quintals in 1924; 478 quintals in 1923; 2,182 quintals in 1922; 8,404 in 1913 against exports of 13,906, 39,836, 33,604 and 59,759 quintals during the same periods. For footwear, imports amounted to 35, 38, 5 and 2,965 quintals in 1924, 1923, 1922 and 1913, respectively; while exports were 2,099 in 1924, 7,489 quintals in 1923, 5,757 quintals in 1922 and 617 quintals in 1913.

Belting, hose and packing compare as follows: imports, 185 quintals in 1924; 63 quintals in 1923; 183 quintals in 1922; 1,834 quintals in 1913; exports—9,915 quintals in 1924; 25,328 quintals in 1923; 26,111 quintals in 1922 and 37,383 quintals in 1913.

Total imports and exports of manufactured rubber goods again show clearly that not only has business not caught up with that of 1913 but it has dropped behind that of 1922 and 1923, the figures being: imports 1924, 3,249 quintals; 1923, 2,562 quintals; 1922, 4,283 quintals; 1913, 41,904 quintals; exports 1924, 75,552 quintals; 1923, 180,327 quintals; 1922, 169,766 quintals; 1913, 197,056 quintals.

The Leipzig Fair

The Leipzig autumn fair had been looked forward to with unusual interest as it was hoped that business would be stimulated. Also, the Dawes plans had caused a certain amount of optimism, and, finally, the Rhine-Ruhr territory was to participate again in the fair after a prolonged exclusion from it.

However, the fair was a great disappointment as far as business was concerned. Exhibitors did their best, but the tightness of money among consumers, keen foreign competition, and high prices of German goods reduced turnover to a minimum except in certain novelties and specialties. Cheap goods of inferior quality found readier buyers, and of course there was a great deal of underselling.

It was found necessary in several instances to reduce prices in order to do any business at all, a sufficient indication of the condition that German prices are now higher than prevailing world market rates. Underselling is instanced by the fact that nipples, the fixed rate of which was 12.85 marks per hundred, were offered at 4.30 marks per hundred. The higher price of German goods is noticed in wringers, for instance, the American product selling at 3-5 marks below a well-known wringer of German manufacture.

Among the novelties shown were a new tennis ball from the Continental Caoutchouc und Gutta-Percha Compagnie, with the seams vulcanized instead of stitched, bathing caps and so-called Apache cloths (Bordeaux kerchiefs) of rubberized silk crêpe de Chine, by the same firm. Vorwerk & Sohn, Barmen, had a ladies' belt resembling leather. Rubber corsets too were shown and proved profitable.

The results of this fair are the more important as it is really the first one since the war that has not been over-influenced by inflation. It now becomes clear that Germany can not hope to beat foreign competition unless prices are reduced. This applies to export business and home business both.

While the Dawes plans have given rise to a feeling of optimism, the news that France has followed England in reintroducing the reparation tax of 26 per cent on all imports of German goods has tended to disturb this new optimism to a certain extent.

Frankfurt and Cologne Fairs

The Frankfurt and Cologne fairs which were held after the Leipzig fair did not prove any more successful than the latter. In Cologne the rubber industry was poorly represented, the chief items being toys, sporting goods, articles for travel, bathing accessories, heels and soles, packing and belting.

In the foreign section, Russia was again represented for the first time in many years, the exhibit including galoshes, tires and technical goods. At Frankfurt, too, most interest was shown in rubber toys, novelties, bathing accessories, and the like.

German Footwear in the Baltic States

The Baltic states—Finland, Esthonia, Latvia and Lithuania—as a rule use comparatively large quantities of rubber footwear, much of which was imported from Germany. In fact these states absorbed 75 per cent of Germany's rubber footwear exports. Finland, according to German statistics, imported 185,300 kilos of rubber shoes from Germany in 1922, and in 1923 207,800 kilos. Esthonia imported 111.5 tons of footwear in 1922 and 139.7 tons in 1923, of which Germany's share was 56.6 tons and 94.0 tons, respectively. Lithuania took 127,900 kilos of German footwear last year. At present, however, all the Baltic states are reported to be suffering under severe business depression. There is a great shortage of money and capital, the markets are flooded with German goods, prices are on the downward grade and it is practically impossible to do any business. As a result exports of rubber footwear dropped steadily from January to May of this year, to cease completely during June. The importance of these circumstances to the German rubber footwear business is evident.

The Rubber Trade in the Far East

Malaya

WHILE improved rubber prices have restored optimism and failing faith in restriction among most producers, there is an insistent demand for the abolition of restriction coming chiefly from those not directly interested in rubber growing.

The Chinese Chamber of Commerce voted against restriction, and the Singapore and Penang Chambers of Commerce expressed their views in no uncertain terms. Possibly the rise in prices has modified the attitude of the Singapore Chamber of Commerce, which now seems to be less definite. Recently the members were requested to give opinions on three points, and the voting was as follows: 39 to 31 were against the abolition of restriction; 54 to 21 were in favor of the present scheme provided the Dutch cooperate; while 54 to 21 were against the present scheme if the Dutch continue to hold aloof. No less than 30 did not vote.

As there is nothing to indicate a change in the Dutch attitude, the voting resolves itself into this: 39 members are in favor of restriction while the rest, barring the 30 who did not commit themselves, apparently will have nothing to do with it.

The feeling here is that only a certain number of European and other large estates have profited by restriction. The numerous small holders and dealers have had great difficulty in making both ends meet; and consequently trade in other goods has fallen off alarmingly. Merchants therefore feel that despite restriction, rubber prices have failed to reach the comparatively low figure of 1*s.* 3*d.*, and as only the large estates are profiting, a measure which benefits 10 per cent of the population at the expense of 90 per cent must go.

What the upshot of this agitation will be seems hard to say. Planters are urging each other to stick together and "no-wavering" is their watchword. The press seems to be unanimously in favor of restriction, though some agree that it requires to be modified. However, people are beginning to shake their heads over the facts coming in regarding Dutch native rubber and the question is asked why Malayan industry should be sacrificed to profit Dutch East Indies natives.

Restriction Statistics

The following statistics have been issued by the Controller of Rubber Exports:

1924	Total Exports British Malaya Tons	Total Exports Restriction Area Tons	Total Imports Foreign Rubber Tons
March	22,294	14,020	8,269
April	20,551	10,759	7,909
May	19,674	13,597	7,259
June	18,084	13,370	7,435
July	21,670	13,780	9,777
Totals	102,273	65,526	40,649

DEALERS' STOCKS

	1924 March Tons	April Tons	May Tons	June Tons	July Tons
Singapore Island	18,950	16,954	16,279	13,902	16,901
Penang	2,538	2,121	1,700	2,057	2,621
Totals	21,488	19,075	17,979	15,959	19,522

RUBBER FROM RESTRICTION AREA ON WHICH DUTY WAS PAID

	1924 March Tons	April Tons	May Tons	June Tons	July Tons
Federated Malay States	8,589	5,869	7,916	7,549	7,862
Straits Settlements	1,718	1,324	1,583	1,642	1,705
Johore	2,514	2,531	2,805	2,829	2,789
Kedah	880	697	974	1,010	988
Kelantan	265	276	236	270	350
Trengganu	54	62	83	70	86
Totals	14,020	10,759	13,597	13,370	13,780

Stock afloat in harbor, July rubber declared in August, 308 tons.

Revised Assessment of Standard Production

Reassessment has brought the total standard production of rubber in Malaya for the twelve months beginning November 1, 1923, to 246,901 tons. This has been apportioned to the various areas as follows:

	Tons
Straits Settlements	29,519
Federated Malay States	142,264
Johore	48,122
Kedah	20,875
Trengganu	1,400
Kelantan	4,721
Total	246,901

Small holdings up to 25 acres are allowed 72,846 tons, estates between 25 and 100 acres 14,763 tons, and estates of over 100 acres 156,774 tons of the total production.

The true effects of the revised standard production will not be immediately felt, as all increases go into effect at once, while cuts in production come in installments. Therefore, at first exports will be in excess of authorized amounts.

Some Views on Dutch Native Rubber

Dutch native rubber is receiving more attention here than formerly, and experienced planters have visited Sumatra to see things for themselves. One of the latter is Fred T. P. Waterhouse, who recently returned from Sumatra and gave local papers the benefit of his experiences. Although Mr. Waterhouse's report confirmed what others, both English and Dutch, have said on the same subject, for some reason his statements were criticized. The *Malay Mail* discovered that he was a tool of the egregious Firestone and was attempting to scare producers into giving up restriction. Mr. Peck endeavored to pick his statements bare. His trump card, which he flourishes in the face of Mr. Waterhouse's statement that the rise in price caused the increase in native rubber and that the output of the latter would go down if prices fell to 30 cents, is his discovery that native exports increased at a greater rate during March-September, 1922, when prices were below 30 cents than when rubber stood at 1*s.* 6*d.*, five months later, and while prices have since fallen, native exports continue to rise.

Mr. Peck dubs his own statement "approximately true" and he is right. The exact truth is that in 1919 native rubber exports were 13,000 tons; they fell to 10,000 tons in 1920 and to 6,000 tons in 1921! During 1922 they rose, until the amount was 24,000 by the end of the year, in 1923 this was 52,000 tons, and during 1924 the monthly shipments have ranged from 7,000 to over 9,000 tons, promising a total of over 90,000 tons for the year.

The proportion of increase may have declined in 1923 but the actual increase was more than maintained and there is no reason to believe that if prices had not risen above 30 cents native exports would have attained their present proportions. Therefore, although these exports may not be as sensitive to price fluctuations as some say they are, yet the above figures prove that restriction has indeed helped to stimulate the native industry.

Whether the removal of restriction will cause a decrease in the outputs of native rubber or not, these crops are at present thwarting the purposes of restriction and thus constitute a menace—unless statistics lie.

Djambi Native Plantations

T. J. Cummings, manager of Seafield Estate, Batu Tiga, recently spent three weeks in Djambi, Sumatra, and tells us that Djambi is very well suited to rubber growing, that increased exports are not due to smuggling, but most important of all, that bark renewal is much better in Djambi than in Malaya. He is convinced that it is

not possible to tap a rubber tree to death. With time and favorable soil conditions any tree will apparently renew its bark.

As it has often been said that the natives kill their trees and that new plantings are merely in the nature of replacement of exhausted trees, this conclusion by a planter of experience is worthy of consideration.

Before dismissing the subject of native planting it should be added that Mr. Bluett, another British investigator of conditions in Sumatra, concluded his report with the remark, also made by others, that rubber, like coconuts, would eventually become a native industry.

Ceylon

Whereas Malaya has been prompt to respond to the appeal for funds for rubber propaganda, the Federated Malay States having agreed to set aside one-eighth of a cent per pound for three years, while the Straits Settlements have given £4,000 for three years, Kedah £2,000 and Johore £4,000, the Ceylon Government refuses to give up any portion of the rubber export tax on the grounds that it is not permissible to allocate any part of the public revenue for advertising any individual industry.

Ceylon on Rubber Restriction

Ceylon is displaying keen interest in reports from the Straits regarding the growing demand for the abolition of restriction. This island was never very anxious to have restriction and voluntary restriction which was subscribed to before the advent of the Stevenson scheme had to be abandoned after some months because less than fifty per cent of the members of the Rubber Growers' Association was found to be carrying it out. It is regarded as fairly certain that the new Legislative Council which will come into being in October will have restriction as one of its first problems to deal with. T. L. Villiers, when speaking on behalf of a candidate recently, pointed out that restriction is very seriously affecting employment in Ceylon. In his opinion, the increasing unemployment noted in various lines besides rubber is to be laid at the door of restriction and this question, he says, will have to be tackled in earnest by the new legislation. At the same time the Low-Country Products Association urges that care should be taken to watch how soon restriction can be lifted, on the ground that restriction and interference by legislation with private enterprise are indefensible.

Restriction Statistics

According to information from the Rubber Controller, Ceylon, exports of rubber during August, 1922-23, were 2,669 tons of Ceylon rubber and 183 tons of imported rubber; for August, 1923-24, the figures are 3,542 tons of Ceylon rubber and 184 tons of imported rubber. There were no latex exports during August of this year.

Netherlands East Indies

From the inquiry into methods of crêpe and sheet preparations in Java, it is learned that in West Java, which is the older rubber planting district, most of the rubber is turned into crêpe, while the younger estates in East Java generally favor sheet. Tapping systems still vary greatly, showing that the transition from daily to alternate daily tapping, or periodical tapping is not yet complete. The majority of the estates use very mild tapping systems.

Nearly all the estates dilute latex to a fixed rubber content, but this standard content still varies somewhat. The weight and size of sheets also differ a good deal. Regarding qualities, thin pale crêpe is more uniform in rate of cure than smoked sheet. About 85 per cent of the crêpe samples fell within the best groups of uniform rubber (the group showing no greater deviation than 10 per cent from the average time of cure), while of smoked sheet this was true of only 62 per cent; 99 per cent of the crêpe is normal (less than 20 per cent away from the general average), against 90 per cent of the sheet, while only 1 per cent of thin pale crêpe against 10 per cent of smoked sheets was abnormal.

Whereas in former years crêpe vulcanized more slowly than smoked sheet, this difference is tending to disappear. Recently B. J. Eaton repeated his former conclusion that in Malaya thin pale crêpe is somewhat inferior to smoked sheet and disadvantageous owing to its slower rate of cure. In Java, the properties of crêpe are very nearly the same as those of smoked sheet and for both kinds are good.

When the market judgment of the samples was compared with the findings in the laboratories, it was seen that in a good many cases samples approved on the market had less desirable inner properties.

Forward Contracts

It is learned that the companies of which J. N. Burger is director have, among others, concluded the following forward contracts:

Sumatra Rubber Cultuur Mij. Serbadjadi—Out of 1924 crop, three contracts totaling 210,000 half kilos, standard sheet, delivery during first quarter of 1925, prices 1*s.* 2⅛*d.* per pound, 72½ guilder cents per half kilo and 73 cents per half kilo, c.i.f. New York and f.o.b. Indian harbor. Out of 1925 crop, three contracts totaling 270,000 half kilos standard sheet, delivery January-December, 1925, and April-June, 1925, at 1*s.* 2½*d.* per pound, c.i.f. Marseilles and New York.

Lampong—Sumatra Mij.—Out of 1924 crop, 60,000 half kilos standard crêpe, January-March, 1925, shipment, 73 cents per half kilo, f.o.b. Indian harbor. Out of 1925 crop, 240,000 half kilos standard crêpe, January-December 1925 shipment, at 1*s.* 2⅝*d.* per pound, c.i.f. New York; and 30,000 half kilos. Standard sheet, April-June, 1925, shipment at 1*s.* 2½*d.* per pound, c. i.f. New York.

Wai-Sumatra Rubber Mij.—Out of 1924 crop: 30,000 half kilos standard crêpe, January-March, 1925, shipment at 1*s.* 2⅛*d.* per pound, c.i.f. New York.

Silau—Sumatra Mij.—Out of 1924 crop: 30,000 half kilos standard crêpe, January-March, 1925, shipment, at 73 cents per half kilo, f.o.b. Indian harbor.

Rubber Maatschappij Ambaloetae.—Out of 1924 crop: 30,000 half kilos standard sheet, January-March, 1925, shipment, at 1*s.* 2¼*d.* per pound, c.i.f. New York, and 30,000 half kilos standard sheets, January-March, 1925, shipment, at 73 cents per half kilo, f.o.b. Indian harbor.

Netherlands Planting Notes

Tapping results of bud-grafts started in 1919 on Malomboe estate, Tapanoeli, Sumatra, confirm Heusser's thesis that the value of a mother tree as supplier of selected planting material can only be ascertained from the tapping results of its buddings. It clearly indicated that even when the stock of a bud-graft is as old as a seedling, bud-grafts from good clones are capable of giving considerably higher yields than seedlings.

It is rumored that at the proposed distribution of lands in the Simeloengeon district, the government intends to reserve a certain portion for planting gutta percha either as a government or native enterprise. This news is not very palatable, as it is feared such action would prejudice the success of the attempt to interest new capital in the above district.

IMPORTS OF MOTOR VEHICLES INTO HONGKONG, CHINA, DURING 1923 were valued at $720,000, an increase of fully 100 per cent over the previous year. Approximately 7,000 automobile tires were sold during the year, of which about 90 per cent were cords and 10 per cent fabric. The market for tires is increasing, and American casings are popular.

JAPAN'S PURCHASES DURING THE FIRST SEVEN MONTHS OF 1924 OF American-made pneumatic casings for automobiles have already reached a total value of $585,958, as compared with only $123,792 for the entire year 1922.

Recent Patents Relating to Rubber

The United States

Issued* September 16, 1924

NO. 1,508,426 Balloon toy. A. J. Swartz, Willard, and Clyde O. Roose, Norwalk, both in Ohio.

1,508,533 Cleat for athletic footwear. J. R. Richards, Dallas, Texas, assignor of one-half to G. O. Berg, Madison, Wisconsin.

1,508,538 Carpet sweeper bail with rubber buffer. J. Taylor, assignor to Entwisle & Kenyon, Ltd., all of Acrington, England.

1,508,648 Garter. A. W. Crown, Thief River Falls, Minnesota.

1,508,651 Inflatable swimming aid. G. Evans, Redondo, California.

1,508,724 Flexible water bag or bucket. W. E. Rose, Boulder, Colorado.

1,508,740 Sanitary pad holder. A. Brand, Chicago, assignor by mesne assignments to Health-Tex Products Corporation, a corporation of Illinois.

1,508,984 Pneumatic tire valve. F. Myers, New York, N. Y.

1,509,025 Ball. J. W. Patterson, assignor to The Seamless Rubber Co., both of New Haven, Connecticut.

1,509,058 Collapsible core. H. A. Denmire, assignor to the General Tire & Rubber Co., Akron, Ohio.

1,509,060 Rubber glove. F. W. Dodge, assignor to The Seamless Rubber Co., both of New Haven, Connecticut.

Issued* September 23, 1924

1,509,137 Waterproof container. B. Gottlieb, New York, N. Y.

1,509,301 Non-Skid tire. E. J. Kearns, Springfield, assignor to New England Tire & Rubber Co., Holyoke, both in Massachusetts.

1,509,491 Ring for ring tennis. F. L. Sawyer, Evanston, Illinois.

1,509,551 Combined inflatable float and paddle for bathers. A. Gibson, Turramurra, New South Wales, Australia.

1,509,658 Relining device for brake bands, etc. J. R. Lewis, assignor by mesne assignments to Inland Accessories Manufacturing Co., both of Chicago, Illinois.

1,509,705 Elastic wheel for vehicles. G. Broulhiet, St. Etienne, France.

Issued* September 30, 1924

1,509,883 Steering wheel with soft rubber hand-hold. F. H. Stanwood, Chicago, Illinois.

1,510,029 Tire valve stem. C. E. Baldwin, assignor of one-fourth to P. A. Badour, both of Oconto, Wisconsin.

1,510,133 Rubber-embedded-metal protecting device for fuel tanks. L. Breguet, assignor to Soc. Anon. des Ateliers d'Aviation Louis Breguet, both in Paris, France.

1,510,145 Head protecting attachment for raincoats. A. Huson, Perth Amboy, New Jersey.

1,510,159 Means for packing tires and other articles for transport. G. F. C. Powell, Birmingham, assignor to the Dunlop Rubber Co., Ltd., Regents Park, London, both in England.

1,510,199 Pneumatic cushion for handlebars. H. Seibel, San Francisco, California, assignor to United Air Spring Co. of Arizona, Phoenix, Arizona.

1,510,215 Non-collapsible tire. L. Fritz, Memphis, Tennessee.

1,510,273 Combined bedpan and mattress with sanitary pad. A. M. Harper, Safford, Arizona.

1,510,363 Nursing bottle and nipple. J. C. Wangen, Great Falls, Montana.

Issued* October 7, 1924

1,510,554 Inflatable doll. J. J. Lee, Brooklyn, assignor to J. R. Rothschild, J. B. Behrend, and C. Coller, composing the firm of Behrens & Rothschild, New York, all in state of New York.

1,510,571 Nursing nipple. W. F. Ware, Haddonfield, New Jersey, assignor to The Walter F. Ware Co., a corporation of New Jersey.

1,510,613 Combined pencil and fountain pen. E. M. Slack, Pecos, Texas.

1,510,709 Pneumatic tire and rim. A. H. Shoemaker, Seattle, Washington.

1,510,747 Inner tube. H. C. Privett, Los Angeles, assignor of one-half to C. R. Privett, and one-fourth to H. P. Privett, both of Long Beach, California.

1,510,927 Hot water bottle and foot warmer. M. M. Dessau, London, England.

1,511,006 Inflatable swimming jacket. H. A. Prescott, Philadelphia, Pennsylvania.

1,511,110 Figure toy employing rubber ball. J. Costello, New York, N. Y.

1,511,126 Transmission band lining. W. H. Heil, Paterson, New Jersey.

1,511,129 Adjustable bandeau. J. A. McKnight, Lincolnton, North Carolina.

1,511,175 Cushion tire. O. Ribarsch, New York, N. Y.

Issued* October 14, 1924

1,511,396 Driving belt with molded rubber friction links. R. P. Champney, Worcester, and F. R. Mitchell, Weston, both in Massachusetts.

1,511,397 Packing for piston rods. G. Christenson, North Plainfield, New Jersey, assignor to Johns-Manville, Inc., a corporation of New York.

1,511,528 Safety sea suit. A. V. Sims, New York, N. Y.

1,511,709 Tire gage. T. C. Cooper, Chicago, Illinois.

1,511,775 Ice applicator. E. F. Rioux, New York, N. Y., and R. L. Colter, Wauchula, Florida.

1,511,783 Inking roller. J. C. Sproull, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,511,864 Hat hanger with elastic member. J. W. Altmyer, Cedar Rapids, Iowa.

1,511,991 Hose supporter with rubber covered rivets. C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

1,511,992 Hose supporter button with rubber collet. C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

1,511,993 Hose supporter, C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

1,511,994 Hose supporter. C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

1,511,995 Garment supporter. C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

1,511,996 Garment supporter. C. J. Hazelton, assignor to American Narrow Fabric Co., both of Worcester, Massachusetts.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted September 16, 1924

242,971 Shoe employing strips of caoutchouc for joining its component parts without vulcanization. M. M. Sorensen, Copenhagen, Denmark.

243,014 Cushion tire. The Lambert Tire & Rubber Co., Barberton, assignee of Carl E. Rett, Akron, both in Ohio, U. S. A.

243,031 Tire pressure gage. A. Schrader's Son, Inc., New York, assignee of W. P. Hammond, Hartsdale, both in New York, U. S. A.

Granted September 30, 1924

243,283 Cushion tire. E. B. Killen, London, E. C. 4, England.

243,357 Corset with elastic sections. The Perfection Corset Co., Ltd., assignee of J. E. Cote, both of Quebec City, Quebec.

Granted October 7, 1924

243,414 Nursing bottle and nipple. G. L. Dunkelberger, Springfield, Illinois, U. S. A.

243,456 Reinforced rubber flooring. J. H. Stedman, Braintree, Massachusetts, U. S. A.

Granted October 14, 1924

243,536 Overshoe for tires. H. S. Bennett, Jamestown, New York, U. S. A.

243,584 Ventilated sanitary pants for infants. J. Stein, New York, N. Y., U. S. A.

243,631 Running gear for motor vehicles. Goodyear Tire & Rubber Co., assignee of E. W. Templin, both of Akron, Ohio, U. S. A.

243,659 Rubber sole. The Vereinigde Nederlandsche Rubberfabricken, Hevesdorp, The Netherlands, assignee of D. F. Wilhelmi, The Hague, Holland.

The United Kingdom

Published September 10, 1924

219,060 Horseshoe with rubber studs. C. J. Betteridge, 85 Corporation street, and R. W. Carless, 7 Eastgate street, both in Stafford, England.

219,081 Telephone earpiece with soft rubber hollow conical member and integral hollow band of slightly harder rubber for clipping over the receiver. J. Walton, Braddon avenue, Brooklands, Cheshire.

219,138 Inner tubes. D. J. Chappell, 52 College Hill, Llanelly, Carmarthenshire.

219,171 Air mattress. S. Black, 11-A Southbank Road, Edge Lane, Liverpool.

219,172 Nipple for feeding bottles. S. Dreyfus, 16 Grand-Pont, Lausanne, Switzerland.

219,199 Uncured rubber air mattress and cushion. T. Rigby, Finney House, Kingsley, near Frodsham, Cheshire.

219,270 Elastic corset. H. Drukker, 11 Van Musschenbroekstraat, Amsterdam.

219,289 Clothes hanger with non-slip rings. M. M. Vonder, 14 Fraumunstrasse, Zurich, Switzerland.

Published September 17, 1924

219,458 Waterproof cover and hold-all for bathers. V. M. Davidson, 37 Margaretta Terrace, Chelsea, London.

219,469 Sponge rubber handle-bar grips. J. Bane, 13 Nursery Lane, Forest Gate, London.

219,534 Sportsman's waterproof blouse. A. Anderson, 35 St. Paul's Churchyard, London.

219,621 Cushion tire. E. Pistorius, Annaberg, Erzebirge, Saxony, Germany.

219,641 Security band shaped to fit between tire edges. Michelin et Cie, Clermont Ferrand, France.

Chemical Patents will be found on pages 88-89, Machinery and Process Patents on pages 92-93

219,657 Rubberized fabric elevator buckets. J. Stephens, Hagersville, Ontario, Canada.

Published September 24, 1924

219,747 Rubber heel pad. T. Binnie, 41 Regent street, Portobello, Edinburgh.

219,855 Rubber capped paving block. E. J. Burt, 15 Ashley Place, Westminster.

219,874 Pneumatic cushion for attachment to a load to be carried, such as a mail pouch. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

219,904 Detachable tread band for tires. A. J. Boyer, Harlaxton Drive, Nottingham.

219,909 Rubber tread block for vehicles. H. C. B. Wight, Ashton Farm, Bishop's Waltham, Hampshire.

219,996 Massage apparatus with rubber-tipped fingers. M. A. Bourgeois, 2 Rue des Poteaux, Neuchatel, Switzerland.

Published October 1, 1924

220,048 Lathering device with hollow rubber holder, for shaving. W. Bourne, 111 Freshfield Road, Brighton, Sussex.

220,075 Feeding bottle for animals. S. Hole, Yew Tree House, Albourne, Hassocks, Sussex.

220,095 Tire cover. C. J. Escoto, 115 Jesus Maria, Bajos, Havana, Cuba.

220,120 Inflatable life belt. B. A. F. De Mierre and C. W. H. E. De Mierre, 14 Hartsholme Drive, Swanpool, and F. Cousans, 32 Thomas street, all in Lincoln.

220,134 Flexible rubber mudguard. G. Colwell, 1 Greenhill, London Road, Worcester.

220,171 Elastic bracelet for carrying a handkerchief. M. A. Holland and F. B. Bosworth, 40 Holborn Viaduct, London.

220,194 Armored tire casing. E. Birkinshaw, 64 Lamartine street, Nottingham.

220,202 Lineman's sheet rubber protective garment. W. R. Biton, 16 Lowther avenue, Toronto, Canada.

220,218 Dust cap for tire valves. Soc. Anon. des Etablissements Tecalemit, 18 Rue Brunel, Paris, France.

220,259 Revolvable rubber heel. H. W. Rush, 697 High Road, and A. W. Turner, 19 Willoughby Park Road, both in Tottenham, London.

220,277 Cushion tire. Goodyear Tire & Rubber Co., Akron, Ohio., U. S. A.

220,290 Tire cover built up in band form. Morgan & Wright, assignees of A. O. Abbott, both of Detroit, Michigan, U. S. A.

Published October 8, 1924

220,361 Waterproof gaiters. J. J. Pagin, 29 Dunloe avenue, West Green, and B. H. Swinson, 23 Ferndale Road, South Tottenham, both in London.

220,407 Renewable rubber calks for horseshoes. J. E. M. Cooke, 12 Rising Brook, Stafford.

220,446 Rubber strips for securing articles in holders. Wardle Engineering Co., Ltd., and E. E. Hopwood, Elsinore Road, Old Trafford, Manchester.

220,566 Endless rubber band for attaching a pocket lamp to the lamp bracket of a bicycle; J. M. Birking, 30 Skoegade, Esbjerg, Denmark.

New Zealand

Published August 7, 1924

51,849 Rubber mat. H. A. Driver, 1 Park Place, Weston-super-Mare, Somerset, England.

Published August 21, 1924

52,138 Elastic heel grip. D. Kernohan, 55 Ravenhill Road, and T. Dennison, "Annaville," Park Road, both of Belfast, Ireland.

52,270 Film-packing container with X-ray-proof rubber body. Victor X-ray Corp., assignee of L. M. Bolin, both of Chicago, Illinois, U. S. A.

Germany

Design Patents Issued, With Dates of Issue

878,661 (June 14, 1924). Durable rubber sheet. Richard Meutzner, Marschallstrasse 13, Dresden.

880,924 (June 25, 1924). Closing strip of sponge rubber for doors, windows, closets, and the like. Paul Thieme, Zinzendorfstrasse 45, Dresden.

881,012 (January 9, 1924). Combined leather and rubber block tire for motorcycles. Herm. Heinmüller, Gesellschaft für Gummi, Asbest und Putzwalle, Darmstadt.

881,039 (July 8, 1924). Endless rubber ring for binding dresses, skirts and the like. Carl Bibl, Bretgasse, Chemnitz.

881,076 (June 12, 1924). Rubber doll with voice. Wilhelm Tücksen, Fildelerstrasse 19, Hannover-Döhren.

881,083 (June 20, 1924). Toy of sponge rubber. H. Lindemann, Dovenfleth 20, Hamburg.

881,097 (July 11, 1924). Automobile and motorcycle tire with colored protective layer of rubber or cloth. Adolph Sostmann, Grossbeerenstrasse 64, Berlin.

881,294 (July 25, 1924). Ornament of rubber. Wilhelm Friedrich Thiele, Springerstrasse 9, Leipzig.

881,374 (July 16, 1924). Sterile injection syringe. Dr. Alfred Schutz, Richard-Wagnerstrasse 30, Mannheim.

881,442 (August 16, 1924). Air cushion for traveling purposes. Max Scheel, Grünstrasse, Breslau.

881,600 (July 3, 1924). Sanitary binder. Heinrich Schenk, Kreutzstrasse 94, Dortmund.

881,775 (July 29, 1924). Cap of sponge rubber for writing materials (pens). Albert Meyer, Marienthalerstrasse 122, Hamburg.

881,785 (August 1, 1924). Rubber water jet regulator with metal sieve insert. Wilhelm Klotz, Schutzenstrasse 64, Dusseldorf.

881,865 (July 31, 1924). Pocket inhaler. Schmaller & Lubenow, Berlin.

881,934 (July 30, 1924). Plaster. Paul Hartmann, A. G., Heidenheim, Brenz.

881,936 (August 1, 1924). Rubber sole. Johann Appel, Leimen bei Heidelberg.

881,961 (August 6, 1924). Protective rubber collar for use in hair cutting. Gottlieb Bott, St. Georgenstrasse 39, Pforzheim.

882,004 (July 14, 1924). Pessary. Dr. Hans Schaedel, Viktoriastrasse 20-21, Liegnitz.

Patents Issued, With Dates of Issue

402,224 (November 30, 1923). Rubber tread patch. Gustav Milse, Hafen 69, Bremen.

402,873 (March 28, 1923). Medicinal syringe. Atelier Electro-Mecanique S. A., Lausanne, Switzerland. Represented by Robert Schwarze, Hamburgerstrasse 18, Frankfurt-am-Main.

402,874 (November 1, 1923). Injection syringe. November 1, 1923. Dr. Otto Hirsch-Tabor, Staufenstrasse 12, Frankfurt-am-Main.

402,875 (August 29, 1923). Injection syringe that may be taken apart. Dr. Arthur Reich, Laboratorium für Kosmetik, Frankfurt-am-Main.

402,876 (October 12, 1923). Pocket inhaler. Hans Koppe, Egenbüttel-Rellingen, Bez Kiel.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted September 16, 1924, Act of February 20, 1905

189,229 GRASSELERATOR—dyestuffs, intermediates, and accelerators for rubber vulcanization. The Grasselli Chemical Co., Cleveland, Ohio.

189,273 The word LIFELINE, with a length of rope interwoven with the letters—suspenders and garters. Ivory Garter Co., New Orleans, Louisiana.

189,286 FEATHERMAC—mackintoshes and raincoats. Rogers, Peet Co., New York, N. Y.

189,322 On a conventionalized shield the representation of the head of a rhinoceros; inscribed on the shield, at the top the word CUPPLES, and curving through the bottom the words: TOUGH AS A RHINO—rubber heels. Cupples Co., Mfrs., St. Louis, Missouri.

189,337 On a circular background the representation of an Indian's head, and within the annular space provided by the border lines the firm's name and address—boots and shoes made entirely or partly of rubber. La Crosse Rubber Mills Co., La Crosse, Wisconsin.

189,366 Within an oval border of distinctive construction the words: DR. BURGER'S ORTHOPEDIC SHOES; HEALTH & COMFORT; NEW YORK—shoes made of leather, fabric, and rubber. Luis Burger, New York, N. Y.

189,368 THE MIDLAND RUBBER CO., arranged perpendicularly, one word to a line, in large black type—boots, shoes and rubbers. Mishawaka Woolen Mfg. Co., Mishawaka, Indiana.

189,394 FRECKLES, arranged so that half of the letters slope upward and the remainder slope downward, the whole outlining an acute angle—garters. Schneider, Battinus & Simon, Chicago, Illinois.

189,418 In the center of a flat wreath which is in turn at the center of a Greek cross the words: MERIT LABEL—shoes of leather and combinations of cloth, rubber and leather. The Miller-Lerch Shoe Mfg. Co., Columbus, Ohio.

189,431 TAUKO—rubber taps, rubber soles and heels. Taunton Rubber Co., Taunton, Massachusetts.

189,443 A parallelogram comprising a background in dark color on which are depicted various kinds of flowers, a square block being left in white as for a label—shoes of leather, rubber, fabric, or combinations of these materials. Cammeyer, New York, N. Y.

189,450 BENISOLE—rubber soles and heels. Charles E. Wood, Inc., New York, N. Y.

Granted September 23, 1924, Act of February 20, 1905

189,519 Within an oblong border the word LANNARK and the silhouette of a girl with a dog on leash—shoes of leather and leather and rubber combined. Bullock's, Los Angeles, California.

189,622 DUAL—rubber sheeting. I. B. Kleinert Rubber Co., New York, N. Y.

189,653 BURR-LOCKT—rubber tires and rubber pneumatic tires for motor vehicles. Burlock Non-Skid Tire Corp., New York, N. Y.

189,654 RESEARCH—rubber tube patching, inner tubes, blowout patches, and radiator hose. Research Club, Inc., Chicago, Illinois.

189,655 Representation of a microscope, an open book, and as a background a wheel rim and tire—rubber tube patching, inner tubes, blowout patches and radiator hose. Research Club, Inc., Chicago, Illinois.

189,722 STRINGO—solution of rubber for repairs. Stringo Co., Berg & Bilde, Gottenborg, Sweden.

Granted September 23, 1924, Act of March 19, 1920, Section 1 (b)

189,778 SWINEHART—tires and tubes made wholly or partly of rubber. The Swinehart Tire & Rubber Co., Akron, Ohio.

189,780 ESSEX—bicycle handlebar grips, step mats for automobiles, and heel rests for use in automobiles. Essex Rubber Co., Inc., Trenton, New Jersey.

189,788 PARAGUM—rubber repair compounds. A. Swanson, trading as Swanson Supply Co., Seattle, Washington.

Granted September 30, 1924, Act of February 20, 1905

189,830 An octagonal figure across the center of which is the word: PREMIER; above this and with the appearance of standing behind it is the representation of a little boy yawning and holding in one hand a lighted candle, and across the opposite shoulder a tire on which is the word: FISK—tires made wholly or partly of rubber. The Fisk Rubber Co., Chicopee Falls, Massachusetts.

189,831 The word: FISK in white letters on a black background, and represented as standing behind this is a little boy in nightclothes, yawning and holding in one hand a lighted candle, and over the opposite shoulder a tire bearing the name: FISK—vehicle tires made wholly or partly of rubber and rubber tubes therefor. The Fisk Rubber Co., Chicopee Falls, Massachusetts.

189,834 The words: STANOLIND MINERAL RUBBER ASPHALT—asphaltic compound for use in the manufacture of tires, etc. Standard Oil Co., Whiting, Indiana, and Chicago, Illinois.

189,940 "PROTEX"—gum rubber aprons, rubberized aprons, rubber household gloves, and baby pants. The Fair, Chicago, Illinois.

189,941 "PROTEX"—rubber household sheeting. The Fair, Chicago, Illinois.

189,945 The word: UNIVERSITY, in black letters on an oblong background one half of which is red and the other half blue—belts for personal wear, suspenders, hosiery, arm bands, etc. Greenebaum, Weil & Michels, San Francisco, California.

189,991 The letters NYCO in distinctive arrangement—automobile tires, tubes, casings, and accessories. New York Auto & Radio Supply Co., Chicago, Illinois.

189,995 GYPSY BAND—figure-retaining garment for women. Model Brassiere Co., Inc., New York, N. Y.

190,004 SHEDTEX—waterproof sheeting. Terry Textile Corporation, New York, N. Y.

190,013 On an oval background the word SNUGFIT in distinctive lettering, and, radiating from the oval border, straight lines terminating in an imaginary border of a parallelogram—gloves, shoes and articles of clothing made of leather, rubber, fabric, or combinations thereof. A. Kommel & Sons, New York, N. Y.

Granted September 30, 1924, Act of March 19, 1920, Section 1 (b)

190,032 GRIPTITE—pneumatic tires. Sterling Tire Corporation, Rutherford, New Jersey.

190,051 ESSEX—hoof pads. Essex Rubber Co., Inc., Trenton, New Jersey.

Granted October 7, 1924, Act of February 20, 1905

190,107 HELENE SANITARY STEP-IN—ladies' sanitary combination belt, apron, bloomer and protector. Helene Manufacturing Co., Scranton, Pennsylvania.

190,108 SLATERMOC—boots and shoes made wholly or in part of leather, rubber, or textile material. C. B. Slater Co., South Braintree, Massachusetts.

190,147 A large black capital letter D—golf balls. The Goodyear Tire & Rubber Co., Akron, Ohio.

190,148 GSCo, arranged as a monogram at the center of a hexagonal figure—infants' and children's shoes of leather, canvas, rubber, and combinations thereof. Glaser Shoe Co., San Francisco.

190,212 A large black capital letter B—golf balls. The Goodyear Tire & Rubber Co., Akron, Ohio.

190,213 A large black capital letter C—golf balls. The Goodyear Tire & Rubber Co., Akron, Ohio.

190,264 Fanciful drawing of a woman's head, beneath which are the words: MOTHER MACHREE—shoes of leather, rubber and fabric. E. C. Till, Owego, New York.

Granted October 14, 1924, Act of February 20, 1905

190,296 ROADGRIPPER—tires wholly or partially of rubber. The Pharis Tire & Rubber Co., Newark, Ohio.

190,297 UNIVERSITY—arm bands, suspenders, belts for personal use, hosiery. Greenebaum, Weil & Michels, San Francisco, California.

190,432 MUSKETEER—rubber tires and tubes. The Champion Rubber Co., Kent, Ohio.

190,485 CORDUROY—pneumatic rubber tires, casings and inner tubes, Corduroy Tire Co., Grand Rapids, Michigan.

190,493 UNIVERSAL—rubber jar rings. K. W. P. Reece, Boston, Massachusetts.

190,562 CRITERION—pneumatic tires and tubes. The National Tire & Rubber Co., East Palestine, Ohio.

190,585 Heavy black letter A within a heavy black circle—tires and inner tubes of rubber or rubber and fabric. The American Rubber & Tire Co., Akron, Ohio.

190,587 MURDOCK, the letters arranged perpendicularly, one under another—hydrants, street washers, horse watering fonts, including rubber heads. The Murdock Mfg. & Supply Co., Cincinnati, Ohio.

190,594 REVELATION—belting made of rubber and of a combination of cotton rubber duck with rubber impregnation and rubber cover, and air hose made of rubber and of a combination of cotton rubber duck with rubber impregnation and rubber cover.

The Dominion of Canada

Registered

36,181 NEMOLASTIK—elastic webbing, corsets, brassieres, garters, etc. Kops Bros., Ltd., of Canada, Toronto, Ontario.

36,184 FIBROK—woolen fabric in the piece containing a small percentage of latex, carpets, floor cloths and oilcloths, goods manufactured from rubber and gutta percha or in which rubber or gutta percha predominates, and waterproofing felt impregnated with rubber latex. Fibrok Products Limited, 10 Fenchurch avenue, London, England.

36,214 Monogram of letters JH—balls for games. The Game Balls Co., Ltd., Brentford, Middlesex, England.

36,221 Words WING and FOOT separated by the winged foot of Mercury—balloons, aerostat accessories, rubber tiling, cement or leather substitutes, and soles. The Goodyear Tire & Rubber Co., of Canada, Ltd., Toronto, Ontario.

The United Kingdom

Published September 17, 1924

450,930 STELLA—elastic webs of India rubber. Archibald Turner & Co., Ltd., 7 Jewin street, London, E. C. 1, and Bow Bridge Works, 3 King Richard's Road, Leicester.

Published September 24, 1924

449,043 BOLENE—an India rubber solution. F. Bolus, St. Helen's, Cheam Hill, Worcester Park, Surrey.

450,414 UTILEX—goods made from India rubber and gutta percha, exclusively in Class 40. The Huddersfield Motor Utility Co., Springdale Mills, Manchester Road, Huddersfield.

450,711 GREBAN—footballs. W. Tomlinson, Ltd., Greenbank Leather Works, 450 Dumbarton Road, Partick, Glasgow.

Published October 1, 1924

450,701 Representation of a flower and under it the word: DAFFODIL—elastic cords, braids, webs, sandallings, trimmings, etc., exclusively in Class 40. Luke Turner & Co., Ltd., Deacon Street Works, Deacon street, Leicester.

450,721 Representation of a swallow in flight and the words, separated by the bird's tail, STAN FAST—rubber cushions for billiard tables. Thurston & Co., Ltd., 45-46 Leicester Square, London, W. C. 2.

450,903 SANCO—goods of India rubber and gutta percha exclusively in Class 40. James Shoolbred & Co., Ltd., Tottenham House, Tottenham Court Road, London, W. 1.

New Zealand

Published August 21, 1924

21,255 CONCAVEX—heels, tips, soles, and pads for boots and shoes, all made of rubber. I. T. S. Rubber Co., Ltd., 42 Great Russell street, London, W. C. 1, England.

Published September 4, 1924

21,418 Representation of a golf ball—goods in Class 40 exclusively, made of rubber or gutta percha. Blakey's Boot Protectors, Ltd., Armley Malleable Iron Works, Modder Place, Armley, Leeds, Yorkshire, England.

21,528 GORDONIA—preservatives made from India rubber. Avey, Taylor & Co., Ltd., Maxwell Bldg., Hobson street, Auckland.

Designs

The United States

Issued* September 16, 1924

65,600 Rubber tire. Term 14 years. A. R. Colvin, assignor to The Combination Rubber Manufacturing Co., both of Bloomfield, New Jersey.

65,601 Tire. Term 14 years. F. J. Dougherty, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

65,605 Tire tread. Term 14 years. A. Hargraves, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

65,614 Bath hood. Term 3½ years. W. B. McCoy, Cleveland, Ohio.

65,615 Tire tread. Term 14 years. H. D. Reichard, Akron, Ohio.

65,600 65,601 65,605 65,615 65,616 65,626 65,630 65,672 65,680 65,688 65,689 65,695 65,708 65,709 65,712

65,616 Tire tread. Term 14 years. H. D. Reichard, Akron, Ohio.

65,626 Tire tread. Term 14 years. C. J. Venn, Chicago, assignor to Century Rubber Works, Cicero, both in Illinois.

Issued* September 23, 1924

65,630 Tire. Term 14 years. F. L. Braender, Montclair, New Jersey.

65,672 Tire. Term 7 years. W. J. Rennick, assignor to The McKone Tire & Rubber Co., both of Millersburg, Ohio.

65,680 Tire tread. Term 7 years. P. E. Welton, Cuyahoga Falls, Ohio, assignor to The Tire Products Mfg. Co., Salisbury, North Carolina.

Issued* September 30, 1924

65,688 Tire. Term 14 years. R. Iredell, assignor to The General Tire & Rubber Co., both of Akron, Ohio.

65,689 Tire. Term 14 years. R. Iredell, assignor to The General Tire & Rubber Co., both of Akron, Ohio.

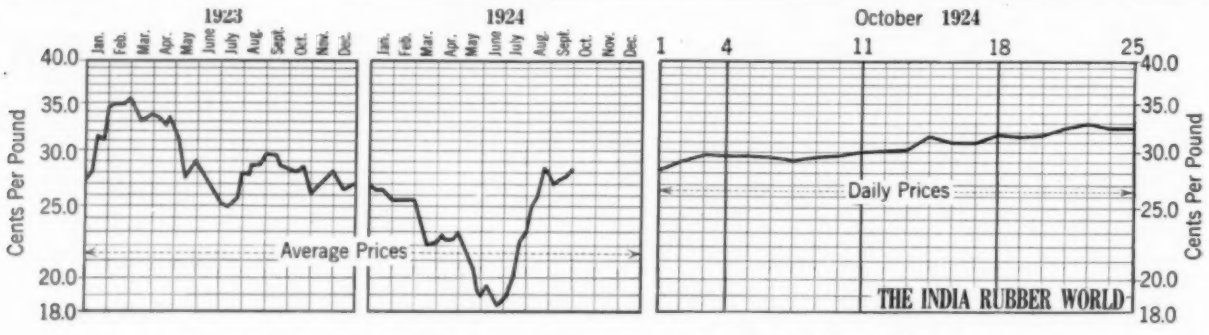
65,695 Tire. Term 14 years. C. E. Murray, Jr., Trenton, New Jersey.

65,708 Tire. Term 14 years. H. H. Swan, assignor to Corduroy Tire Co., both of Grand Rapids, Michigan.

65,709. Tire. Term 14 years. J. D. Tew, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

65,712 Tire tread. Term 14 years. W. S. Wolfe, Akron, Ohio.

65,744 Shoe sole. Term 14 years. C. Kuhn, Brooklyn, New York, assignor to The Manhattan Rubber Co., a corporation of New Jersey.



Ratio Graph of New York Average Sales Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE persistent advance of spot prices that has characterized the rubber market for several months was accelerated during October by active factory buying to replace manufacturing stocks, and the certainty of reduction for the current quarter in exportable shipments of plantation grades to 50 per cent of standard under the Stevenson plan. The advance between October 1 and 25 amounted to four cents a pound, or four times that in September. During the last few days of September there was little change in prices, because of the strength of the London market and the small offerings from London and the Far East. Factories were bidding below dealers' prices.

October opened with high London cables and expectation of advancing prices due to the strong statistical position of rubber as indicated by current stocks and restriction. Under these influences the market continued advancing firmly, but was generally quiet during the second week due to the holiday. The advances of the week were attributed to Germany's purchases of rubber under credits based on the general acceptance of her international loan, also on higher eastern cables. These conditions served to advance spot prices to 30 cents, and January-March ribs to 31 cents. Crêpe became scarce and sold up to ¾ cent premium over ribs.

With the opening of the third week the market was less active but price advance continued. Good business with manufacturers was in evidence. At the close of the week spot ribs sold for 31¾ cents, and January-March at 31⅞ to 32 cents.

The succeeding week prices continued strong and firm. On October 22 spot advanced a full cent a pound to 33½ cents, the highest in 18 months, in view of the fact that consuming demand is drawing heavily on London stocks and far eastern shipments are limited. The week-end market quotations on ribs were: Spot and November-December, 32½ cents; January-March, 32¾ cents.

Parás kept pace with the advances of plantations and became quite active in view of the reported political unrest in Brazil and scarcity of firm cable offers from there.

Balatas were dull by reason of lack of demand. Brazilian grades were quoted higher.

Importations of all grades during September, 1924, were 29,000 tons, compared with 11,611 tons one year ago. Plantation arrivals for September were 28,362 tons, compared with 10,890 tons one year ago. Total importations of plantation rubber for nine months ended September 30 were 211,960 tons, compared with 225,379 tons for the corresponding period of 1923. Total importations of all grades of rubber for the nine months ended September 30 were 223,861 tons, compared with 238,933½ tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. October 1. Spot first latex crêpe, 29-29½ cents; Oct. 29-29½ cents; Nov.-Dec., 29-29½ cents; Jan.-Mar., 29-29⅝ cents.

October 25. Spot first latex crêpe, 32½ cents; Oct., 32½ cents; Nov.-Dec., 32½ cents; Jan.-Mar., 32¾ cents.

October 1. Spot ribbed smoked sheets, 28½-29 cents; Oct. 28½-29 cents; Nov.-Dec., 28½-29 cents; Jan.-Mar., 29-29⅜ cents.

October 25. Spot ribbed smoked sheets, 32½ cents; Oct., 32½ cents; Nov.-Dec., 32½ cents; Jan.-Mar., 32¾ cents.

October 1. Spot No. 2 amber crêpe, 28¾-28⅞ cents; Oct., 28¾-28⅞ cents; Nov.-Dec., 28¾-28⅞ cents; Jan.-Mar., 28⅞-29⅛ cents.

October 25. Spot No. 2 amber crêpe, 32-32¼ cents; Oct., 32 cents; Nov.-Dec., 32 cents; Jan.-Mar., 32 cents.

October 1. Spot No. 1 rolled brown crêpe, 27¼-27½ cents; Oct., 27¼-27½ cents; Nov.-Dec., 27¼-27½ cents; Jan.-Mar., 27⅝-27¾ cents.

October 25. Spot No. 1 rolled brown crêpe, 31 cents; Oct., 31 cents, Nov.-Dec., 31 cents; Jan.-Mar., 31 cents.

SOUTH AMERICAN PARAS AND CAUCHO. October 1. Spot, upriver fine, 28¾-28½ cents; islands fine, 24½ cents; upriver coarse, 18¾-18½ cents; islands coarse, 15¼ cents; Cametá, 14½ cents; caucho ball, 18¾-18½ cents.

October 25. Spot, upriver fine, 32½ cents; islands fine, 30 cents; upriver coarse, 21¾ cents; Cametá, 16 cents; caucho ball, 21-23¼ cents.

New York Average Sales Prices of Spot Rubber

PRICES IN CENTS, PER POUND

PLANTATIONS	September, 1924																							
	*1	2	3	4	5	6	8	9	10	11	12	13	15	16	17	18	19	20	22	23	24	25	26	27
Sheet																								
Ribbed smoked	....	26¾	26½	26¾	26⅞	26¾	26¾	27	27¼	27¼	27⅜	27⅜	27⅜	27⅝	27¾	27⅝	27⅞	28	28¼	27⅞	27⅞	28	28¼	28¼
Crêpe																								
First latex	....	27¼	27	27⅛	27¼	27¼	27⅛	27⅜	27⅛	27⅝	27⅞	27⅞	28⅛	27⅞	28	27⅞	28⅛	28¼	28⅛	28⅛	28⅛	28¼	28¼	28⅜
Off latex	....	26½	26½	26¾	26¾	26¾	26⅝	26⅞	27⅛	27⅛	27¼	27½	27¾	27⅜	27⅜	27⅜	27⅜	27¾	27⅞	27⅞	27¾	27¾	27¾	27⅞
No. 1 blanket	....	26⅛	....	....	....	....	....	....	26¾	....	....	....	....	....	....	....	....	....	27⅞	....	27¾	....	....	....
No. 2 blanket	....	26⅛	26⅛	25⅞	26¼	26¼	26⅜	26½	26¾	26⅝	27⅛	27	....	27½	27⅜	27½	27¼	27½	27⅜	27¾	27¾	27½	27⅜	28
No. 3 blanket	....	26⅛	25⅞	25⅝	26	25⅞	26½	26½	26½	26¼	26⅞	26¾	27¼	27⅛	27½	27	27⅛	27⅜	27½	27¼	27¼	27⅜	27⅜	27¾
No. 4 blanket	....	....	....	....	....	....	25¾	25⅞	26	26	26¼	26¾	26⅞	27	27½	26¾	26¾	27⅛	27¼	26⅞	27	26⅞	27¼	27½
Thin, clean brown	....	26	26	26¼	26⅛	26⅛	25⅜	26⅛	26⅛	26⅛	26¾	26⅞	27¼	27	27½	27⅛	27½	27⅜	27½	27¼	27½	27¼	27⅜	27⅝
Specky brown	....	25¼	25⅜	25½	25½	25½	25⅛	25⅜	25⅝	25¾	26⅛	26½	26⅝	26⅝	26⅝	26½	26½	27	26¾	26⅝	26¾	26¾	27¼	27⅜
Rolled brown	....	24⅞	24¼	24⅜	24½	24⅝	24¾	24¾	25⅛	25¼	25½	25⅝	26⅛	25⅞	26	25¾	26⅛	26¼	26⅜	26¼	26¼	26½	26⅜	26¾

* Holiday.

London

The rubber market opened October 1 at 14¾ pence, with good business in spot for American account. The price promptly advanced to 15⅜ pence, owing to the increase of consuming demand from the United States and shortage of offerings from the Far East. This advance, however, declined in a couple of days to parity with the price in Amsterdam, where American buying had become more active. The second week of the month prices gained fractionally and were firm. Buying interest subsided and the week closed with the market speculative. The following week prices were well over 16 pence and rising. Some American buying activity developed before the close of the week and news of American tire price reduction was a disturbing market factor. The fourth week was featured by excellent American and Continental demand, strong advancing prices, and speculative trading.

Reported London stocks were reduced 6,170 tons between September 23 and October 21, reaching on the latter date a new low record for spot tonnage. The weekly stocks were as follows: September 23, 45,993 tons; October 1, 44,010 tons; October 7, 43,238 tons; October 14, 41,813 tons; October 21, 30,823 tons.

Singapore

The course of the October market followed closely that in the secondary markets of London and New York. The month opened with prices firm and rising and sellers not offering rubber on any position. Little was offered for earlier than November when offerings were resumed. Traders were waiting consuming developments with spot and nearby strong and advancing. Shipments to London exceeded those to New York because of better prices. For ten days following the middle of the month absence of offerings at times practically paralyzed the market and prices advanced in sympathy with those in London to 17¼ pence. Before the end of the month the increase of stocks by up country arrivals and the increase of sellers dropped the price of spot to 16¼ pence.

New York Quotations

Following are the New York spot rubber quotations, for one year, one month ago, and October 25, the current date:

Plantation Hevea

	October 25, 1923	September 25, 1924	October 25, 1924
LATEX			
Rubber latex (Hevea), *gal.*	$1.30 @	$1.30 @	$1.30 @
CREPE			
First latex	.27⅝ @ .27¾	.28¼ @ .28⅜	.32½ @
Off latex	.27½ @	.28 @	.32¼ @
Amber No. 2	.24¼ @ .24½	.27¾ @ .28	.32 @ .32¼
Amber No. 3	.24 @	.27½ @ .27¾	.31¾ @ .32
Amber No. 4	@	.27⅜ @	.31⅝ @ .31¾
Brown, clean, thin	.24¼ @ .24½	.27½ @	.31¾ @ .32
Brown, specky	.24 @ .24¼	.27¼ @	.31¼ @ .31½
Brown, roll	.24 @	.26½ @	.31 @
Sole crêpe	@	.45 @ .46	.42 @ .45
SHEET			
Smoked, ribbed	.25⅞ @ .26	.28 @	.32½ @

East Indian

PONTIANAK			
Banjermassin	.07 @ .08	.05½ @ .06	.07 @ .07½
Palembang	.07 @ .08½	.08 @	.07¼ @
Pressed block	.12½ @ .13½	.12¾ @ .13	.13¼ @
Sarawak	.07 @	.06 @	.07 @

South American

PARAS			
Upriver, fine	.22¼ @ .22¾	.27½ @	.32½ @
Upriver, fine	*.31¾ @	*.37¾ @	*.41¾ @
Upriver, medium	.20 @	.25 @	.29 @
Upriver, coarse	.17¾ @	.17½ @	.21¾ @
Upriver, coarse	*.30 @	*.28 @	*.32¼ @
Islands, fine	.19¼ @ .20	.24 @	.30 @
Islands, medium	@	.23 @	@
Islands, coarse	.11 @	.16 @	†.16 @
Cametá	.11¼ @ .11½	.14½ @	†.16 @
Acre Bolivian, fine	.22 @ .22½	.27¾ @	.32½ @
Acre Bolivian, fine	*.32 @	*.38 @	*.42 @
Beni Bolivian	.22¼ @	.27¾ @ .28	.32½ @
Madeira, fine	.23 @	.28 @ .28½	.33 @
Peruvian, fine	.21 @	.27¼ @	.30 @
Tapajos, fine	.21 @	.27¼ @	.30½ @

CAUCHO	October 25, 1923	September 25, 1924	October 25, 1924
Upper caucho ball	.18¾ @ .19	.17½ @	.23¼ @
Upper caucho call	*.30¼ @	*.28 @	*.33 @
Lower caucho ball	.17 @	.15¾ @	.21 @
Maniçobas			
Ceará negro heads	@	†.14 @	.14 @
Ceará scrap	@	†.08 @	.08 @
Maniçoba 30% guaranty	@	†.19 @	.20 @
Mangabeira, thin sheet	@	†.22 @	.25 @
Centrals			
Central scrap	.12½ @ .13½	.19 @	.20½ @
Central wet sheet	.13¼ @ .14	.14 @	.17 @
Corinto scrap	.13½ @ .14	.19 @	.20½ @
Esmeralda sausage	.26 @	.19 @	.20½ @
Guayule washed and dried	.26 @	.25 @	.26 @
Africans			
Benguela, No. 2, 32½ %	.13 @ .15	.14 @	.15 @
Congo prime, black upper	.20 @ .21	.20 @ .21	.26 @
Congo prime, red upper	.22 @	.19 @ .26	.25 @
Kassai, black	.21 @ .22	.20 @ .21	.26 @
Kassai, red	.19 @ .21	.19 @ .20	.25 @
Gutta Percha			
Gutta Siak	.15½ @ .16	.17 @	.17 @ .17½
Gutta Soh	.26 @	.26 @	.27 @ .27¼
Red Macassar	3.00 @ 4.00	3.00 @	3.00 @ 3.20
Balata			
Block, Ciudad Bolivar	.69 @ .70	.65 @ .66	.64 @
Colombia	.55 @ .56	.55 @ .56	.53 @ .54
Panama	.54 @ .55	.55 @ .56	.53 @ .54
Surinam, sheet	.73 @ .74	.76 @ .77	.75 @
amber	.76 @ .77	.79 @ .80	.78 @
Chicle			
Honduras	.62 @	‡.58 @ .68	‡.58 @ .68
Yucatan, fine	.65 @	‡.58 @ .68	‡.58 @ .68

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.
‡Duty paid.

Comparative Low and High New York Spot Rubber Prices

	October		
PLANTATIONS	1924*	1923	1922
First latex crêpe	$0.29 @ $0.33½	$0.26 @ $0.28½	$0.15½ @ $0.22¼
Smoked sheet, ribbed	.28½ @ .33	.26 @ .28¼	.15¼ @ .22¾
PARAS			
Upriver, fine	.28¼ @ .32½	.22 @ .26¼	.18½ @ .24
Upriver, coarse	.18¾ @ .23	.18 @ .22¼	.13½ @ .19
Islands, fine	.24¾ @ .29½	.19½ @ .25	.16¾ @ .22½
Islands, coarse	.15 @ .21	.11½ @ .14	.08½ @ .16½
Cametá	.14½ @ .19	.11¾ @ .13	.09 @ .15

*Figured to Oct. 25, 1924.

Reclaimed Rubber

The consumption of all grades of reclaim continued in large volume for the past month, necessitating full time operation on the part of reclaimers to meet the demand. Prices remain stable at low levels with competition active and profits less than justified on the basis of volume and quality.

Reclaimers are seeking outlets for their products in new uses, particularly in flooring and road paving, in which ground cured scrap is figuring, at present, more largely than reclaim.

The great activity in tire production is absorbing increasing quantities of high tensile reclaims, which have become a necessity in treads, side walls and even frictions at present low schedules of prices. For tire and mechanical goods purposes, auto tire grades and the so-called super-reclaims have been found particularly dependable.

New York Quotations

October 25, 1924

Auto Tire		
Black	*lb.*	$0.08½ @ $0.08¾
Black, washed	*lb.*	.10 @ .10¼
Dark gray	*lb.*	.09 @ .09⅛
Light gray	*lb.*	.10¾ @ .11
White	*lb.*	.13½ @ .14½
High Tensile Black		
Super-reclaim, No. 1	*lb.*	.14½ @ .15½
No. 2	*lb.*	.11½ @ .12

Reclaimed Rubber—*Continued*

Shoe

Unwashed	lb.	$0.08½ @	$0.08¾
Washed	lb.	.12¼ @	.12½

Tube

No. 1	lb.	.13½ @	.14½
No. 2	lb.	.10½ @	.11½

Uncured Tire Friction

No. 1	lb.	.23 @	.24
No. 2	lb.	.17 @	.18

Miscellaneous

High grade, red	lb.	.13¼ @	.13½
Truck tire	lb.	.08 @	.08¼
Mechanical blends	lb.	.05 @	.06

The Market for Rubber Scrap

Rubber scrap prices have remained steady and firm on virtually the whole list. Advances have, however, taken place in auto peelings, mixed autos and clean tires. The continued increasing activity in reclaiming is certain shortly to bring about a revival in demand for scrap at probably better prices.

BOOTS AND SHOES. There has not been much stock available at the low level of dealers' bids. Buying by reclaimers has not run into large volume and scrap is not offering freely at present low prices.

INNER TUBES. Prices are steady and firm at last month's quotation. Export demand is not large and foreign bids run at low levels. Inner tubes are moving slowly for domestic reclaiming.

MIXED TIRES. Prices have advanced with the increase in consuming demand for the leading grades, which are the basis of high tensile reclaims employed in tires and mechanical goods.

AIR BRAKE HOSE and MECHANICAL GRADES. Trade in these grades has been of limited proportions because of their low reclaiming value.

Consumers' Quotations for Carload Lots Delivered

October 25, 1924

Boots and Shoes

Boots and shoes, black	lb.	$0.02¼ @	$0.02½
Trimmed arctics, black	lb.	.01⅞ @	.02
Red and white	lb.	.01 @	.01¼
Untrimmed arctics	lb.	.01¼ @	.01⅜

Hard Rubber

Battery jars, black compound	lb.	.01 @	—
No. 1 scrap	lb.	.05 @	.06

Inner Tubes

No. 1 floating	lb.	.04¼ @	.04½
No. 2 compounded	lb.	.02¾ @	.03
Red	lb.	.02½ @	.02¾

Mechanicals

Black scrap, mixed	lb.	.00½ @	.01
Heels	lb.	.00⅝ @	—
Horse-shoe pads	lb.	.00⅞ @	—
Hose, air brake	ton	16.00 @	17.00
regular	ton	11.00 @	13.00
Red, scrap, mixed	lb.	.01⅜ @	.01⅝
White, scrap, mixed	lb.	.01⅜ @	.01⅝

Tires

PNEUMATIC

Auto peelings	ton	20.00	@30.00
Bicycle	ton	8.00	@ 9.00
Standard white autos, with beads	ton	22.00	@25.00
Mixed autos, with beads	ton	15.00	@16.00
Stripped, unguaranteed, with beads	ton	10.50	@11.00

SOLID

Carriage	ton	21.00	@22.00
Irony	ton	11.00	@15.00
Truck, clean	ton	25.00	@30.00

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	August, 1924 Pounds	August, 1924 Value	Eight Months Ended August, 1924 Pounds	Eight Months Ended August, 1924 Value
UNMANUFACTURED—*free*				
Crude rubber				
From France	83,119	$21,577	803,590	$181,925
Netherlands	1,043,571	234,237	1,940,233	458,333
Portugal	.....	.....	1,854	180
United Kingdom	4,591,146	1,130,955	42,567,089	10,477,515
Canada	6,761	1,375	120,632	26,841
Central America	1,036	127	21,984	2,734
Mexico	.....	.....	625	170
Brazil	756,966	104,121	17,430,869	2,883,647
Peru	10,454	1,725	812,601	146,660
Other So. America	2,217	995	1,320,871	238,135
British E. Indies	35,366,454	6,874,248	305,449,452	70,954,530
Dutch E. Indies	6,583,830	1,419,420	80,916,627	20,089,159
Other countries	324,357	76,505	3,924,447	1,089,180
Totals	48,769,911	$9,865,285	455,310,874	$106,549,009
Balata	14,868	7,010	537,174	283,052
Jelutong or Pontianak	735,253	69,254	10,414,135	959,504
Gutta percha	58,586	8,889	2,190,987	318,225
Guayule	212,000	37,224	1,838,183	326,694
Rubber scrap	395,933	12,105	6,396,486	271,475
Totals	50,186,551	$9,999,767	476,687,839	$108,707,959
Chicle *dutiable*	117,385	72,076	1,982,439	1,277,826
MANUFACTURED—*dutiable*				
Rubber belting	45,563	30,844	410,711	281,421
Other manufactures of substitutes for rubber	.....	74,618	.....	1,675,866
Totals	45,563	$105,462	410,711	$1,957,287

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	236,581	$23,346	3,631,591	$347,482
Scrap and old	1,562,892	67,748	13,534,161	520,927
Footwear				
Boots *pairs*	89,634	188,375	325,730	760,248
Shoes *pairs*	350,549	323,924	925,041	827,502
Canvas shoes with rubber soles *pairs*	291,514	203,380	2,564,606	2,014,349
Druggists' rubber sundries	.....	.....	.....	.....
Water bottles and fountain syringes *number*	51,547	42,580	149,272	119,237
Other druggists' rubber sundries	72,505	82,194	458,099	543,052
Bathing caps *number*	6,686	15,662	133,336	246,889
Hard rubber goods				
Battery jars and accessories	6,115	2,513	293,572	83,649
Other electrical supplies	9,564	4,121	83,346	52,394
Other hard rubber goods	29,205	35,253	270,163	328,214
Tires				
Pneumatic casings				
For automobiles *number*	109,584	1,377,210	827,168	10,161,950
Others *number*	5,732	21,494	32,488	135,594
Pneumatic tubes				
For automobiles *number*	101,781	187,865	769,467	1,423,775
Others *number*	4,851	3,809	32,831	29,301
Solid tires				
For automobiles and motor trucks *number*	9,172	215,143	73,693	1,931,333
Others *number*	72,712	18,810	889,671	221,114
Tire repair materials	133,016	56,787	859,673	339,739
Belting	283,089	162,954	2,427,763	1,442,552
Hose	332,333	135,099	3,124,089	1,226,042
Packing	177,627	81,269	1,292,087	559,007
Soles and heels	246,247	75,985	1,663,210	537,604
Thread	94,472	116,195	751,782	807,409
Other rubber manufactures	371,228	257,100	2,990,424	1,686,040
Totals	.....	$3,698,816	.....	$26,345,413

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	1,242,284	$289,463	14,691,212	$3,455,326
Balata	30,873	19,922	271,344	157,054
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	.....	.....	52,969	2,055
Totals	1,273,157	$309,385	15,015,525	$3,614,435
Chicle	56,476	$21,460	68,974	$26,409
MANUFACTURED				
Gutta percha and india rubber	12,651	7,158	44,976	21,497
Totals	12,651	$7,158	44,976	$21,497

Details of exports of domestic merchandise by countries during August, 1924, appear on pages 130-133 of this issue.

The Market for Chemicals and Compounding Ingredients

New York

CONTINUED advance in rubber goods manufacturing, particularly in the heavy volume lines of tires, footwear, and mechanicals, has stimulated the sales of all the basic compounding ingredients. The necessity for economy now favors testing new materials and new grades of old ones offered at lower prices, leading to manufacturing development without sacrifice of quality in the goods.

ACCELERATORS. The usual organic accelerators are in good demand and while indispensable in tire manufacturing are gaining acceptance in the manufacture of practically all rubber goods, the most recent field for their use being in dry heat curing in connection with colored rubber. For this purpose the so-called ultra-accelerators are specially adapted.

CARBON BLACK. The recent over-production of carbon black due to the increase in the number of plants has been a factor in weakening the price of the usual grades. Distressed lots from some small producers are reported offered at 4½ cents f.o.b. southern producing points. The demand for highest grades of carbon black, such as Micronex, has been well sustained the past month at undiminished prices, where a falling off might have been expected.

CLAY. The popularity of clay as a compounding ingredient has led to marketing with much success of certain grades below those of highest abrasive value without reducing the demand for the latter, the call for which practically equals present facilities of output.

LITHARGE. Prices continue firm and unchanged. This material is as standard as sulphur to the rubber worker and is called for as steadily.

MINERAL RUBBER. As a plastic and binder mineral rubber is increasing in use, due to its value in rubber flooring.

THERMATOMIC CARBON. This new product from natural gas has found great favor with rubber workers owing to its special qualities and low volume cost.

ZINC OXIDE. Prices remain unchanged. Makers are getting a good volume of trade from the rubber industry especially from the tire manufacturers, to whom zinc oxide is indispensable.

New York Quotations

October 25, 1924

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10	@
Lead, red	lb.	.11	@
sublimed blue	lb.	.09½	@
sublimed white	lb.	.09½	@
Lime, flour	lb.		@
R. M. (factory)	lb.	.01¼	@
R. M. hydrated (C.L.)	ton	20.00	@
superfine	lb.	.01½	@$0.02
Litharge	lb.	.10½	@
Magnesia, carbonate	lb.	.07¼	@ .08
carbonate, light	lb.	.07¼	@ .09½
calcined, light (bbls.)	lb.		@
calcined, ex. light (bbls.)	lb.	.40	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04½	@ .05
Orange mineral A.A.A.	lb.	.14	@
Rubber lead	lb.	.10	@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.30	@
Aldehyde ammonia powder	lb.	.95	@
Aniline (factory)	lb.	.16	@ .16½
sulphate	lb.		@
Cryline	lb.	.60	@
Diphenyl guanidine	lb.	1.10	@ 1.20
Ethylidene aniline	lb.	.70	@ .75
Excellerex	lb.		@
Formaldehyde aniline	lb.	.42½	@
Hexamethylene tetramine	lb.	.85	@
Lead oleate (fac'ty)	lb.	.16	@
Methylene aniline	lb.	.34	@ .42
No. 999	lb.	.15½	@
Shawinigan paraldehyde	lb.	.17	@ .19
Paraphenylene diamine	lb.	1.30	@ 1.40
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .35
Tuads	lb.	6.00	@
Triphenyl guanidine	lb.	.26	@ .32
Triphenylguanidine	lb.		@

Acids

Acetic 28% (bbls.)	cwt.	3.38	@
glacial (carboys)	lb.	.16	@
Cresylic (95% straw color)	gal.	.63	@ .68
(95 dark)	gal.	.61	@ .66
Sulphuric, 66° (carboys)	lb.	.02	@

Alkalies

Caustic soda	cwt.	$3.10	@$4.50
flake, 76% (factory)	cwt.	3.60	@ 4.31
solid, 70% (factory)	cwt.	3.20	@ 3.91

Colors

BLACK

Aerfloted arrow	lb.	.05¾	@ .09½
Bone	lb.	.08	@ .09
Carbon black	lb.	.06	@ .10
compressed	lb.	.06½	@ .11
Drop	lb.	.08	@ .09
Ivory black	lb.	.12	@ .30
Lampblack	lb.	.10	@ .15
Micronex	lb.	.07	@ .12
A. & W. nonfli	lb.	.40	@
Shawinigan	lb.	.17	@ .18
Thermatomic carbon (factory)	lb.	.04	@ .07

BLUE

Cobalt	lb.	.21	@ .26
A. & W. blue	lb.	2.00	@ 4.00
Prussian	lb.	.40	@ .50
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.		@
Sienna, Italian	lb.	.04½	@ .14
Umber, Turkey	lb.	.04½	@ .05

GREEN

Chrome, light	lb.	.29½	@$0.31
medium	lb.	.32	@ .35
dark	lb.	.35	@ .38
commercial	lb.	.10	@ .10½
tile	lb.	.13	@ .15
A. & W. green	lb.	2.00	@ 3.00
Oxide of chromium	lb.	.36	@ .51
T. K.	lb.	.40	@ .45

RED

Antimony, golden	lb.		@
golden T. K.	lb.	.18	@ .22
golden R.M.P. No. 7	lb.	.20	@
golden pentasulphide, T. K.	lb.	.33	@ .35
golden, 15/17% G. E.	lb.		@
golden, 15/17% F. S.	lb.	.18	@
golden, No. 1	lb.	.30	@
golden, No. 2	lb.	.20	@
Antimony, crimson	lb.		@
crimson T. K.	lb.	.45	@ .50
crimson, 15/17% G. E.	lb.		@
crimson, 15/17% F. S.	lb.	.39	@
crimson, R.M.P. No. 3	lb.	.48	@
crimson P.	lb.	.45	@
7-A	lb.	.35	@
Z-2	lb.	.18	@
Vermilion, 5% F. S.	lb.	.65	@
Vermilion 15/17% F.S.	lb.	.50	@
Arsenic, red-sulphide	lb.		@
A. & W. red (4 shades)	lb.	1.50	@ 3.00
purple	lb.	2.00	@ 3.00

RED

Iron oxides

domestic	lb.	$0.02½	@$0.12
English	lb.	.11	@ .13
English Indian	lb.	.02½	@ .05
Indian, pure	lb.	.09	@ .13
pure bright	lb.	.11	@ .14
reduced	lb.	.07	@ .10
Spanish	lb.	.02½	@ .04
Venetian	lb.	.02	@ .05½
Oximony	lb.	.13½	@
Pará toner	lb.	.95	@ 1.00
Toluidine toner	lb.	1.95	@ 2.25
Vermilion, English	lb.	1.35	@

WHITE

Akcolith	lb.		@
Albalith	lb.	.06½	@ .06½
Aluminum bronze	lb.	.55	@ 1.25
Lithopone	lb.	.05¾	@
Sterling	lb.	.06½	@ .06½
Azolith	lb.	.06½	@ .06½
Imported	lb.	.05½	@ .06¼
Red seal, imported	lb.		@
T. O. pigment	lb.	.15	@ .17
Zinc oxide			
AAA, lead free	lb.	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	lb.	.07¾	@ .08¼
ZZ (5% leaded)	lb.	.06⅞	@ .07⅛
Z (8.10% leaded)	lb.	.06⅞	@ .07⅛
French process, Florence brand			
Green seal	lb.	.11	@ .11¼
Red seal	lb.	.10	@ .10¼
U. S. P.	lb.	.16	@ .18
White seal	lb.	.12	@ .12¼
Horse Head brands			
Selected	lb.	.08½	@ .08¾
Special	lb.	.08½	@ .08¾
XX red	lb.	.08	@ .08¼
Leaded brands			
Lehigh	lb.	.07⅛	@ .07⅛
Standard	lb.	.07⅛	@ .07⅛
Sterling	lb.	.07⅛	@ .07⅛
Superior	lb.	.07⅛	@ .07⅛
Palmerton process			
Kadox, black	lb.	.10⅞	@ .11⅛
blue	lb.	.09⅞	@ .10⅛
red	lb.	.08⅞	@ .09⅛
Snow white	lb.		@

YELLOW

Arsenic	lb.	.65	@ .75
Chrome	lb.	.18	@ .21
A. & W. yellow	lb.	2.50	@ 4.00
India rubber	lb.	.75	@
Ochre, domestic	lb.	.01½	@ .02½
imported	lb.	.03	@ .03½

Compounding Ingredients

Aluminum flake (sacks C.L.)	ton	$21.85	@
(sacks L. C. L.)	ton	24.50	@
Ammonia carbonate	lb.	.13	@ .14½
Asbestine (factory)	ton	13.00	@25.00
Aluminum silicate	ton		@
Barium, carbonate	ton	63.00	@65.00
dust	lb.	.05	@ .06
Barytes, imported	ton	28.00	@38.00
pure white	ton	30.00	@35.00
O.C.X., off color	ton		@
water ground and floated	ton	23.00	@26.00
Basofor	lb.	.04¼	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	lb.	.01¼	@
Chalk, precip. extra light	lb.	.04¼	@ .05
heavy (f.o.b. factory)	lb.	.03¼	@ .04
Clay, Dixie	ton	20.00	@35.00
Blue ribbon (C. L. facty.)	ton	14.00	@
Blue Ridge	ton	12.00	@26.00
Catalpo (facty.)	ton	38.00	@40.00
China	lb.	.01½	@
China, L. H. B. (fact'y)	ton	13.00	@22.50
English, L. H. B.	lb.	.02½	@ .02¾
Langford	ton	12.00	@25.00
Cotton flock, black	lb.		@
light-colored	lb.		@
white	lb.		@
Cotton linters clean mill-run	lb.	.04½	@
Fossil flour (powdered)	ton		@
(bolted)	ton		@
Glue, high grade	lb.	.22	@ .30
medium	lb.	.20	@ .26
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.06½	@ .12
Infusorial earth (pow'd)	lb.	.03½	@
(bolted)	ton		@
Lime (bolted)	lb.	.01½	@ .02
Mica, amber	lb.	.05	@
powdered	lb.		@
white	lb.		@
Pumice stone, powd.	lb.	.03	@ .05
Rotten stone (bbls.)	lb.	.02½	@ .04½
Slate flour (facty.)	ton	8.50	@15.00
Soap bark, cut	lb.	.09	@ .09½
Soapstone	ton	15.00	@25.00
Sodium bicarbonate (bbls.)	cwt.	2.00	@
Starch, powd. corn (bags)	cwt.	3.97	@ 4.07
(bbls.)	cwt.	4.24	@ 4.34
Talc, soapstone	ton	15.00	@22.00
Terra blanche	ton	23.00	@27.00
Whiting, domestic No. 3	ton	10.00	@
chalk, L. H. B.	ton	16.00	@25.00
commercial (facty.)	cwt.	.90	@ 1.00
English, imported	lb.	.01¼	@
English, cliffstone (fac.)	cwt.	1.50	@ 2.00
Georgia calcite	ton		@
gilders (bolted)	cwt.	$1.10	@$1.20
Nelco (factory)	ton	11.00	@22.50

Chemical Market—*Continued*

New York Quotations

October 25, 1924

Perfection	ton		@
Quaker	ton	13.00	@22.00
Snowflake white	ton		@
Superfine	ton		@
Sussex	ton	8.00	@16.00
Witco (C. L.)	ton	20.00	@
York	ton	8.00	@
Wood pulp, XXX (facty.)	ton	35.00	@
X (facty.)	ton	25.00	@

Mineral Rubber

Genasco (facty.)	ton	50.00	@52.00
Gilsonite	ton		@
Granulated M. R.	ton	40.00	@60.00
Hydrocarbon, hard	ton	31.00	@50.00
Hydrocarbon, soft	ton	30.00	@50.00
Ohmlac Kapak, K-R	ton	30.00	@60.00
K-4	ton	175.00	@
320/340 m. p. hydrocarbon	ton	47.00	@52.00
300/310 m. p. hydrocarbon	ton	42.00	@47.00
Pioneer, M. R., solid (fac.)	ton	42.00	@44.00
M. R. granular	ton	52.00	@54.00
Robertson, M. R., solid, (facty.)	ton	35.00	@75.00
M. R. (gran. facty.)	ton	42.00	@80.00
Rubrax (facty.)	ton	60.00	@
Sympro, gran. M. R. (facty.)	ton		@

Resins and Pitches

Tar, pine, retort	bbl.	12.50	@12.75
kiln	bbl.	12.75	@13.75
Pitch, Burgundy	lb.	.06	@
coal tar	ton	24.00	@
Fluxol hardwood	lb.	.02	@ .05
pine tar	bbl.	5.50	@ 6.00
ponto	lb.	.06	@
Rosin, K (bbl.) 280 lbs.		7.50	@
strained (bbl.) 280 lbs.		7.50	@
Shellac, fine orange	lb.	.67	@ .68
substitute	gal.	1.50	@
Peanut, crude	lb.	0.12½	@
refined	lb.	.16	@ .16½
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.68	@ .78
Rapeseed, refined	gal.	.93	@ .94
blown	gal.	1.05	@ 1.08
Rosin	gal.	.45	@ .49½
Soya bean	lb.	.11¼	@
Tar	gal.	.26	@ .28
Woburn	lb.	.05	@

Oils (Softeners)

Avoilas compound	lb.	.12	@ .13
Castor, No. 1, U. S. P.	lb.	.16¼	@ .17
No. 3, U. S. P.	lb.	.16¼	@ .16½
Corn, crude (bbls.)	lb.	.11¼	@ .11½
Cotton, Summer yellow	lb.	.11¼	@
Cycline	gal.	.35	@ .38
Glycerine	lb.	.19	@ .19½
Linseed, raw	gal.	1.05	@
Liquid rubber	lb.	.11	@
Palm lagos	lb.	.08¾	@ .09
clarified	lb.	.09½	@ .10
Palm, niger	lb.	.08¾	@
Parra M. R. flux	lb.	.06	@ .07

Solvents

Acetone (98.99%, [6.62 lbs. gal.])	lb.	.16	@ .16½
Benzol (90%, 7.21 lbs. gal.)	gal.	.28	@
pure	gal.	.30	@
Carbon bisulphide (10.81 lbs. gal.)	lb.	.06	@ .06½
tetrachloride (13.28 lbs. gal.)	lb.	.07	@ .07½
Gasoline			
No. 303			
Tankcars	gal.	.20	@
Drums, C. L.	gal.	.23	@
Drums, L. C. L.	gal.	.26	@
Motor gas (steel bbls.)	gal.	.14	@
Naphtha, V. M. & P.	gal.	.13	@
68° Bé., 122°, 324°	gal.	.16½	@
70° Bé., 114°, 314°	gal.	.17½	@
71° Bé., 112°, 304°	gal.	.18½	@
Turpentine, spirits	gal.	.87	@
wood, steam distilled	gal.	.78	@

Substitutes

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .15
Brown factice	lb.	.08¼	@ .14
White factice	lb.	.08¾	@ .16

Vulcanizing Ingredients

Black hypo	lb.	.18	@
13% F. S.	lb.	.20	@
Sulphur chloride (jugs)	lb.	.04	@ .05
(drums)	lb.		@
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.60	@ 2.90
(bags)	cwt.	2.35	@ 2.65
Sulphur, Brooklyn brands			
Refined velvet (bbls.)	cwt.	2.60	@ 3.15
(bags)	cwt.	2.35	@ 2.90
Superfine flour (bbls.)	cwt.	2.40	@ 2.90
(bags)	cwt.	2.00	@ 2.50
Rubber makers	cwt.	3.05	@ 3.50

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.43	@ .47
ceresine, white	lb.	.10	@ .11
carnauba	lb.	.19	@ .20
montan	lb.	.06	@ .06½
ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30

Paraffin

122/124 white crude scale	lb.	.06	@
124/126 white crude scale	lb.	.06½	@
120/122 fully refined	lb.	.06⅜	@
125/127 fully refined	lb.	.06½	@

AGING OF RUBBER GOODS

In a paper on the aging of rubber, read before a meeting of German physicists and physicians at Innsbrück, Friedrich Eschbaum of Berlin reported finding sulphuric acid present in old vulcanized rubber goods and expressed the opinion that not only does the presence of sulphuric acid indicate aging but it also accelerates decomposition of the rubber.—*Chemiker-Zeitung*, September 30, 1924, 702.

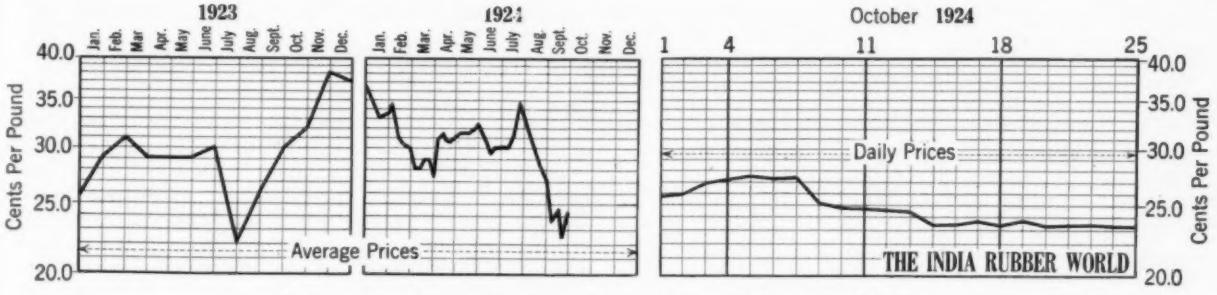
EFFECT OF OZONE ON RUBBER

The effect of ozone on ebonite and soft vulcanized rubber is very detrimental, causing disintegration of the material by rapid oxidation. It also has a destructive action on phenolic insulating materials. Experiments are reported in progress with the object in view of removing the rubber from the fabric in scrap tires by ozone treatment. Ozone attacks the rubber and leaves the canvas, which is thus reclaimed for further use.—Ozon Maatschappij, "Odrie," The Hague, Holland.

PLASTICITY SYMPOSIUM

At the Intersectional Meeting of the American Chemical Society and Hart Celebration held at Lafayette College, Easton, Pennsylvania, October 16, 17 and 18, a symposium on plasticity was held. Many phases of the subject were discussed in the 14 papers presented. Among these was one on "What the Paint and Rubber Technologist Wants in Plasticity Measurements," by Frank G. Breyer, New Jersey Zinc Co. Research Laboratory.

BRITISH SOUTH AFRICA CONTINUES TO BE ONE OF THE LEADING markets for American mechanical rubber goods, with purchases of rubber belting reaching a total during the first seven months of 1924 of $138,729. This figure is lower however than that for the corresponding seven months of 1923, when a value of $190,485 is recorded. Hose imports during this period are estimated for 1924 at $123,273 as compared with $128,422 in 1923, with packing at $17,393 and $14,857 for the seven months' period of 1924 and 1923 respectively.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. As the end of the growing season approaches the crop condition reports apparently take on critical significance. The government report of September 16 indicated a crop expectation of 12,596,000 bales, and was followed by an excited and very rapid advance in the cotton market. The official report giving the crop condition as of October 1, indicating a yield of 12,499,000 bales, was evidently above figures discounted in the future market. The next government report, published October 25, indicated a yield of 12,675,000 bales. Market sentiment has fluctuated as to the ultimate size of the crop being between 12,000,000 and 13,000,000 bales but is now settling to the conviction that the crop will prove from 12,000,000 to 12,500,000 bales, with prices well above 20 cents a pound.

A New York cotton authority states that looking to the future the most important feature is that the whole world has suddenly awakened from a dream of plenty to a realization of a limited if not an actually small supply. Under these conditions prices must advance to a level where consumption will be curtailed to fit.

ARIZONA COTTON. Greatly diminished area was planted this season to Arizona Pima. September consumption, in 500 pound bales, is given as 2,262 bales and stocks on hand, as of September 30, are put at 11,200 bales.

EGYPTIAN COTTON. Late crop news from Alexandria indicates certain scarcity in the crop of Sakels. Business has been less active the past few weeks, probably in expectation of the latest United States governmental crop report. Various artificial local stimulants in addition to the advances in American cotton prices have forced a heavy advance in Uppers and Sakels. Boston c.i.f. quotations on these Egyptian grades for November-December shipment ranged between September 27 and October 25, as follows:

Medium Sakels, 41-7/16 cents to 44-1/16 cents; Medium Uppers, 32⅛ cents to 33 cents. While Egyptian futures have advanced in sympathy with American cotton and prices are firm, very little interest has been shown in the market.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. Buying interest early in the past month was restricted in these goods, consumers having covered their requirements in September for the next few months. The combined purchases of rubber goods manufacturers, in this connection, totaled at several million pounds.

The market situation is gaining activity on fabrics generally. Prices are still low but show some tendency to attain a firmer basis.

SHEETINGS. The demand is generally quiet although there continues to be a certain amount of business on sheetings and other gray goods placed principally by rubber manufacturers for delivery extending through the first quarter of next year. Prices are fairly stationary, with tendency to weakness.

TIRE FABRICS. The leading producers are reported to have sold up their output to the end of this year and are asking firmer prices. There is inquiry for spot fabric, with no considerable surplus available. Hand-to-mouth policy of buying is still in effect on the part of some tire manufacturers, the plan being to continue covering requirements every 30 days. The principal manufacturers, however, have contracted for about half of their fabric supply for the first quarter of 1925.

New York Quotations

October 25, 1924

Drills

38-inch 2.00-yard	yard	$0.21½@
40-inch 3.47-yard		.12½@
52-inch 1.90-yard		.23⅛@
60-inch 1.52-yard		.29 @

Duck

CARRIAGE CLOTH

38-inch 2.00-yard	yard	.23 @
40-inch 1.47-yard		.30½@
72-inch 16.66-ounce		.54⅛@
72-inch 17.21-ounce		.56 @

MECHANICAL

Hose	pound	.42 @
Belting		.41 @

TENNIS

52-inch 1.35 yard	yard	.35 @

Hollands

DEAD FINISH

Standard, 36-inch	yard	.19½@
41-inch		.23½@

FLAT FINISH

Imperial, 36-inch		.15½@
40-inch		.17½@

RED SEAL

36-inch		.18 @
40-inch		.19 @
50-inch		.30 @

GOLD SEAL

40-inch		$0.29 @

Osnaburgs

40-inch 2.35-yard	yard	.18½@
40-inch 2.48-yard		.17⅝@
40-inch 3.00-yard		.14½@
37-inch 2.42-yard		.18 @

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	.12½@
Bombazine 60 x 48		.11½@
Plaids 60 x 48		.12 @
Plaids 56 x 44		.11½@
Surface prints 60 x 48		.12½@
Surface prints 56 x 44		.12 @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.16 @.16¼
48 x 48, 2.85-yard		.14 @
64 x 68, 3.15-yard		.14½@
56 x 60, 3.60-yard		.11¾@.12
48 x 44, 3.75-yard		.10¾@

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	$0.08¼@
40 x 40, 6.15-yard		.07¼@

Tire Fabrics

SQUARE WOVEN 17¼-ounce

Egyptian, karded	pound	.60 @
Peeler, karded		.50 @

CORD 23/5/3

Egyptian, combed	pound	.66 @
Egyptian, karded		.62 @
Peeler, combed		@
Peeler, karded		.53 @

CORD 13/3/3

Peeler, karded	pound	.49 @

LENO BREAKER

8-oz. Peeler, karded	pound	.50 @
10-oz. Peeler, karded		.50 @

CHAFER

8.25-oz. Peeler, karded	pound	.60 @
9.5-oz. Peeler, karded		.59 @
12-oz. Peeler, karded		.57 @
14-oz. Peeler, karded		.52 @

The Cotton Outlook

Fair Cotton Crop Seems Assured

THIS year's American cotton crop, the size of which has been engaging the attention of the textile world since it was planted, because of the diminishing stocks of raw cotton, responded to better growing conditions in the first half of August but has since deteriorated somewhat, as has been the rule at this season in past years. The following table shows for comparison the forecasts of the crop reporting board of the Department of Agriculture.

Date	Condition of Crop	Yield Per Acre	Total Yield
May 25	65.6	....	.....
June 25	71.2	....	12,144,000
July 16	68.5	....	11,934,000
August 1	67.4	146.3	12,351,000
August 16	64.9	....	12,956,000
September 1	59.3	151.5	12,787,000
September 16	55.4	149.2	12,596,000
October 1	53.5	148.0	12,499,000

The report of October 1 forecasts a crop of 12,499,000 equivalent 500-pound bales, a decrease of 97,000 bales from the September 16 forecast, and of 457,000 bales from the August 16 peak estimate, but 355,000 bales more than the first estimate of the year on June 25. In other words, the crop now promises to a little more than approximate the average annual world consumption of American cotton for the past two years. Last year 10,139,671 bales were grown.

The crop reporting board's forecast of production was based on a condition of the crop estimated at 53.5 per cent of normal, indicating a yield per acre of about 148.0 pounds. Ginnings prior to October 1 this year were 4,525,520 running bales.

Little hope is entertained that the abnormally low carry-over will be much increased by this season's crop, or that prices will be materially influenced downward, taking into consideration the estimated domestic and foreign demand of 12,000,000 to 13,000,000 bales. One guess is as good as the next as to the upward or downward trend of prices. The general belief seems to be that American cotton will tend to decline but will continue to be fundamentally strong, hovering just around 20 cents, neither far below nor much above. Stable cotton prices are needed to encourage buying and it appears that cotton is becoming stabilized. Textile markets are improving, with production at about 75 per cent capacity.

So many factors influence the price of cotton that an estimate based solely upon the size of the crop is valueless. The world's buying power, the world's supply of cotton, the world's carry-over, naturally are among the controlling factors. It is impossible to estimate the precise degree of their influence. The following table, however, showing the operation of a few of these factors in past years is not without interest at the present time.

Season	World's Carry-over, Bales.	U. S. Commercial Crop, Bales.	Av. Price Mid-Ups N. Y. Cents per lb.
1905-06	5,042,633	11,002,904	11.20
1906-07	4,178,938	13,306,846	11.48
1907-08	5,692,723	11,257,538	11.30
1908-09	4,855,093	13,496,751	10.42
1909-10	5,676,526	10,224,923	15.37
1910-11	4,732,491	11,804,749	15.50
1911-12	4,844,744	15,683,945	10.83
1912-13	6,808,927	13,943,220	12.30
1913-14	6,462,899	14,494,762	13.30
1914-15	7,519,383	14,766,467	8.97
1915-16	8,351,668	12,633,960	11.98
1916-17	5,379,082	12,670,099	19.12
1917-18	4,477,496	11,547,650	29.65
1918-19	4,163,478	11,410,192	31.04
1919-20	5,336,330	11,814,453	38.25
1920-21	5,770,040	11,218,918	17.95
1921-22	6,980,048	11,494,720	18.92
1922-23	7,101,792	10,910,777	26.30
1923-24	5,102,795	.....	.....

Large Foreign Crops

In the foreign cotton growing countries large crops are indicated this year, probably totaling 2,000,000 to 3,000,000 bales more than last year. According to preliminary figures the indicated yield in India is estimated roughly at 6,000,000 bales, as against 4,247,000 bales during the corresponding period in 1923. In China it is expected that the growth of cotton this year will total approximately 2,300,000 bales, as compared with 1,300,000 bales last year, while in Egypt it is likely that this year's crop will amount to about 1,400,000 bales, according to private estimates. For the 1923-24 season it was 6,417,083 cantars against 6,683,809 the previous year, or approximately 1,083,000 bales against 1,336,000. Brazil's crop will also be large, but British growing has been exaggerated.

Cotton Exports Larger Than Last Year

In the statistical year ended July 31, 1924, exports of raw cotton were 5,655,856 bales of lint and 116,144 of linters, a total of 5,772,000. In the preceding year exports were 4,442,589 bales of lint and 41,438 of linters, a total of 4,864,027 running bales. This represents an increase of 907,973 bales, or over 18 per cent. Distribution for the two seasons was as follows:

	1924	1923
United Kingdom	1,713,229	1,287,552
France	717,838	641,578
Italy	549,433	496,714
Germany	1,264,378	934,358
Other Europe	801,259	622,291
Japan	543,889	635,605
All other	181,974	245,929
Total	5,772,000	4,864,027

The United Kingdom took 425,677 more bales in the year just closed than in the preceding period, an increase of over 23 per cent. British visible supply of American cotton July 31, 1924, was 190,000 bales, against 160,000 a year before. Germany took 330,020 more bales last year than the year before, an increase of over 35 per cent. This compares with an increase of only 307,947 bales or some 17 per cent for the rest of Europe. Visible supply of American cotton for all Europe at close of the season was 530,000 bales against 402,000 last season, an increase of but 128,000 notwithstanding an increase of 637,967 in imports, indicating increased spinning activity, especially in England and Germany. On October 3 the world's visible supply was estimated at 2,864,472 bales compared with 2,807,195 a year ago and 3,873,585 in 1922. Of this supply 1,970,472 bales were American. Exports of American are now running from 5 to 7 per cent above a year ago.

Cotton Consumption Increased

Cotton consumed during September amounted to 435,216 bales of lint and 49,976 of linters, compared with 357,465 of lint and 44,296 of linters during August this year and 485,665 of lint and 50,652 of linters during September last year.

Cotton on hand September 30 was held as follows: In consuming establishments, 514,537 bales of lint and 70,479 of linters, compared with 552,669 of lint and 83,334 of linters so held on August 31 of this year and 772,632 of lint and 93,341 of linters so held on September 30 last year.

In public storage and at compresses, 2,072,953 bales of lint and 38,202 of linters compared with 810,913 of lint and 44,239 of linters so held on August 31 this year and 2,147,012 of lint and 22,678 of linters so held on September 30 last year.

Imports during September totaled 9,654 bales, compared with 4,136 in August this year and 6,608 in September last year.

Exports during September totaled 737,010 bales, including 3,498 bales of linters, compared with 277,641 including 6,064 of linters in August this year, and 689,435 including 3,742 of linters in September last year.

Cotton spindles active during September numbered 30,122,384, compared with 28,945,603 in August this year and 33,930,948 in September last year.

Delivery of Futures at New Orleans Proposed

The Special Southern Warehouse Committee of the New York Cotton Exchange has unanimously recommended the extension of delivery privileges on future contracts to New Orleans, Louisiana, in the belief that the practice is economically sound in principle, would undoubtedly tend to keep quotations more in harmony with spot values, and would be practicable in numerous cities but for adverse state laws. At present all future contracts on the New York Cotton Exchange call for delivery in New York, N. Y. Extending delivery privileges to Norfolk, Savannah, Galveston, and Houston would have been recommended but for restrictions in state laws.

The committee recommends:

"New Orleans deliveries with an allowance to the receiver equal to the official coastwise freight rate in effect on date notices are issued.

"With tenders limited on one contract to three contiguous grades.

"Separate warehouse receipt and classification certificate for each bale.

"Clayton and Harriss's plan for safeguarding of southern warehouse receipts."

The Clayton-Harriss plan referred to requires: (1) Warehouses in New Orleans to come under the federal warehouse act before receiving licenses from the New York Cotton Exchange; (2) that no warehouse be licensed which carries an insurance rate higher than that known as AB rating; (3) that warehouses so licensed be required to charge a uniform storage and handling rate on certificated cotton; (4) that such warehouses be required to insure the validity of their receipts covering certificated cotton under a policy and with a company approved by the New York Cotton Exchange.

NORTH CAROLINA SECOND STATE IN COTTON GOODS INDUSTRY

North Carolina now ranks first in the South in the cotton goods manufacturing industry, and second only to Massachusetts in the nation, according to the biennial report of the North Carolina Department of Labor and Printing now being prepared. Indeed, although North Carolina has fewer spindles in place than Massachusetts it has at times during 1923 surpassed both Massachusetts and South Carolina in the number of active spindle hours.

North Carolina leads all states in the number of mills; is second in the number of spindles; second in the value of products; second in value added by manufacture; and second in the number of wage earners employed. The state is first, however, in the manufacture of numerous articles of the cotton trade, including commercial yarns. It is third in the manufacture of tire fabrics other than duck.

There are now 386 mills with 5,918,588 spindles in place in North Carolina, representing a capital of $168,292,542, or an increase of close to $20,000,000 during the past year.

The number of looms in the State is 85,402, and the number of cards, 15,494, both figures showing substantial increases. The use of horsepower also has increased, 241,024 units now being used.

The annual number of pounds of the raw material used by the North Carolina mills is 553,085,685 and the value of its yearly output is $252,078,364.

There are now 48,609 men, 30,347 women, and 4,772 children employed in the mills. The first two figures indicate increases, the last a decrease. The children employed are between the ages of 14 and 16 years. The average wage scale of the period has increased over that of two years ago.

EXPORTS OF GOLF BALLS FROM GLASGOW, SCOTLAND, TO THE United States were estimated as being in 1922 11,120 pounds, value $25,116. In the following year however such exports had declined to 5,577 pounds, value $15,168.

Metal Market Review

New York

The markets remained very quiet during the first part of October, but with slightly better business in the last half of the month there were moderate price advances in copper, zinc and tin.

ALUMINUM. Offerings of imported aluminum are very scarce. The price of this metal in France is reported to have been so increased that it approximates the high levels of 1920 and one producer has rationed foreign customers due to home demand.

ANTIMONY. During the greater part of October the antimony market remained very active and firm. After the middle of the month prices became higher, while there is said to have been a shortage of September-October shipments.

COPPER. During the last few months copper exports have been greater than before the war, but it is discouraging that prices are so low when so large a volume of business has been done. Statistics show that copper production for the third quarter was 10,000,000 pounds per month less than production for the first quarter. Following the German loan offering there was an increased buying movement in this country, and the prospects for this metal are stronger.

LEAD. The market remained steady throughout the month, while shipments into consumption were very heavy. Prices are tending higher, October lead is practically sold out, and there is much interest in November and December metal.

NICKEL. Quotations for shot and ingot nickel are 28 to 30 cents a pound, and electrolytic nickel is quoted at 33 cents.

STEEL. Steel ingot production increased 10½ per cent in September, according to figures compiled by the American Iron and Steel Institute, this comparing with a gain of 36 per cent the previous month, the first improvement since March. The steel industry, now operating between 60 and 65 per cent of capacity and increasing production, is showing improvement as manufacturers become adjusted to the zoning system of quotations.

TIN. The world's visible tin supply decreased 1,068 tons in September to 20,233 tons, and this news stimulated the market to further advances during the first part of October. The statistical position has continued to improve, and visible supplies are now 23,000 tons less than six months ago.

ZINC. There has been little demand in this country for this metal, although moderate price gains have been recently made in London. According to the American Zinc Institute, stocks of zinc decreased 5,202 tons in September.

Basic Metals

October 25, 1924

	Cents per pound	
Aluminum, virgin, 98@99 per cent	27.00	@28.00
Antimony	11.75	@
Copper—Lake, spot	13.37	@13.50
Electrolytic, spot	13.37	@
Casting refinery	13.00	@
Lead, spot, New York	8.40	@ 9.00
Lead, spot, East St. Louis	8.50	@ 8.75
Nickel, ingot, pound	29.00	@32.00
Tin, spot	52.00	@
Zinc, spot, New York	6.77	@ 6.80
Zinc, spot, East St. Louis	6.42	@ 6.45

Steel Wire

BASE PRICE* on No. 9 GAGE AND COARSE

	Cents per pound	
Bright basic	4.25	@ 4.50
Annealed soft	4.50	@ 4.75
Galvanized annealed	5.15	@ 5.40
Coppered basic	5.15	@ 5.40
Tinned soft Bessemer	6.15	@ 6.40

*Regular extras for lighter gage.

Copper Wire

Base price F. O. B. factory

	Cents per pound	
Bare copper wire	15.125	@
No. 6 B. & S. gage	15.125	@
No. 8 B. & S. gage	15.125	@
No. 14 B. & S. gage	16.125	@

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Water-proofed Auto Cloth Value	Water-proofed Clothing Value
EUROPE													
Austria	.....	.....	$185	.....	44,059	$85,603	62,277	$84,519	.....	.....	.....	$268	.....
Azores and Madeira Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	$49	$1,475	149	.....	48	173	3,296	1,920	.....	.....	.....	1,089	$97
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	91	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	1,176	328	1,088	.....	1,986	4,927	11,422	9,102	140	$67	$1,000	.....	.....
Finland	1,115	549	.....	.....	.....	.....	.....	.....	.....	.....	254	140	.....
France	3,070	399	1,610	$38,372	132	433	.....	.....	.....	.....	.....	1,359	517
Germany	525	.....	.....	.....	.....	.....	6,239	7,822	.....	.....	.....	.....	.....
Greece	31	.....	.....	.....	.....	.....	600	561	.....	.....	.....	.....	.....
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Is.	.....	.....	.....	.....	.....	.....	2,120	5,587	.....	.....	.....	.....	.....
Italy	.....	1,055	118	4,789	1,116	3,613	13,284	10,043	.....	.....	120	353	.....
Latvia	1,234	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Goza and Cyprus Is.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	180
Netherlands	501	99	.....	.....	.....	.....	4,224	2,125	395	227	1,121	532	.....
Norway	451	530	178	.....	630	1,796	3,264	2,419	.....	.....	1,180	.....	.....
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	427	.....	.....	.....	.....	1,420	1,177	3,084	2,845	404	592	.....
Rumania	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	128	.....	.....	4,930	240	677	912	790	.....	.....	439	212	.....
Sweden	5,768	296	225	.....	757	2,778	1,428	4,382	48	49	174	1,452	.....
Switzerland	.....	.....	.....	1,514	468	936	129,636	114,292	170	340	264	896	.....
Turkey in Europe	.....	143	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ukraine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
England	24,178	5,344	9,283	44,964	21,028	48,270	37,538	25,057	6,952	4,816	883	12,895	360
Scotland	1,288	995	.....	.....	10,798	16,180	24,212	18,678	72	144	.....	.....	4,784
Ireland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$39,541	$11,731	$12,836	$94,549	81,262	$165,393	361,872	$288,474	10,861	$8,488	$5,799	$19,788	$5,938
NORTH AMERICA													
Canada	$4,262	$13,326	$6,100	$6,303	2,206	$5,163	1,882	$2,525	144	$146	$1,558	$18,011	$908
British Honduras	8	48	32	.....	.....	.....	.....	.....	77	144	.....	.....	201
Costa Rica	639	1,437	77	.....	.....	.....	240	193	84	82	540	.....	.....
Guatemala	.....	284	187	.....	.....	.....	12	16	390	385	286	284	525
Honduras	555	2,217	737	81	.....	.....	72	66	560	617	2,301	.....	875
Nicaragua	1,703	113	88	.....	.....	.....	2	1	567	631	1,090	.....	9
Panama	52	8,702	1,952	.....	72	248	24	37	5,124	3,656	1,209	335	1,242
Salvador	360	436	457	.....	.....	.....	.....	.....	.....	.....	2,377	.....	.....
Mexico	15,179	15,672	11,778	1,435	92	339	786	608	37,167	30,461	21,456	1,582	5,925
Miquelon and St. Pierre Islands	.....	.....	.....	.....	192	545	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	131	2,356	28	.....	2,327	6,899	22,371	13,106	1,516	963	287	49	1,691
Bermuda	.....	.....	.....	.....	18	54	.....	.....	347	302	268	32	13
Barbados	.....	16	.....	.....	.....	.....	.....	.....	216	154	.....	121	.....
Jamaica	.....	80	65	.....	.....	.....	673	593	7,223	6,290	96	591	18
Trinidad and Tobago	.....	22	237	.....	.....	.....	.....	.....	72	67	54	551	170
Other British West Indies	.....	118	45	.....	.....	.....	.....	.....	1,567	1,077	.....	.....	68
Cuba	3,135	9,838	18,316	.....	48	170	2,932	2,229	87,434	50,621	6,947	6,187	10,594
Dominican Republic	246	554	603	.....	.....	.....	.....	.....	14,769	10,601	1,346	100	453
Dutch West Indies	353	115	149	.....	.....	.....	12	20	4,011	3,163	78	.....	186
French West Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	916	694	52	.....	.....	.....	.....	.....	2,104	1,464	388	49	12
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	.....	.....	632	597	278	.....	12
TOTALS, NORTH AMERICA	$27,539	$56,029	$40,903	$7,819	4,955	$13,409	29,006	$19,394	164,004	$111,421	$40,559	$27,892	$22,902
SOUTH AMERICA													
Argentina	$13,773	$3,211	$952	.....	.....	.....	5,180	$3,139	65,476	$41,848	$5,604	$16,638	$163
Bolivia	.....	629	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brazil	4,592	2,138	1,344	.....	12	$36	2,538	2,009	.....	.....	.....	2,889	17
Chile	33,302	8,321	1,930	.....	24	81	.....	.....	3,888	2,348	.....	2,150	300
Colombia	568	1,252	698	$250	.....	.....	151	109	4,261	2,883	5,747	886	813
Ecuador	212	726	.....	.....	.....	.....	.....	.....	792	484	942	216	.....
British Guiana	.....	636	210	.....	.....	.....	.....	.....	72	84	.....	157	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	78	73	71	.....	.....
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paraguay	1,059	.....	254	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	907	6,499	4,859	.....	58	355	312	956	60	45	131	904	140
Uruguay	502	514	511	.....	.....	.....	298	251	18,171	12,663	1,974	3,277	212
Venezuela	1,515	3,264	1,411	19	100	155	132	104	.....	.....	4,079	253	185
TOTALS, SOUTH AMERICA	$56,430	$27,190	$12,169	$269	194	$627	8,611	$6,567	92,798	$60,428	$18,548	$27,370	$1,830
ASIA													
Aden	$22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	5,965	$180	$1,403	.....	.....	.....	.....	.....	2,570	$2,276	.....	$600	.....
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	384	241	.....	753	.....
Straits Settlements	1,003	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	888	.....
China	2,218	1,025	131	.....	.....	.....	9,068	$7,847	261	426	$81	880	$13
Chosen	3,126	117	.....	.....	.....	.....	24	24	.....	.....	.....	.....	.....
Java and Madura	375	1,236	23	.....	.....	.....	.....	.....	.....	.....	165	3,019	45
Other Dutch East Indies	424	30	222	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hejaz, Arabia, etc.	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Honckong	.....	.....	.....	.....	.....	.....	.....	.....	288	406	.....	.....	.....
Japan	213	6,036	5,727	$13,245	1,068	$3,041	.....	.....	.....	.....	200	477	76
Kwangtung, leased territory	.....	.....	.....	.....	.....	.....	.....	.....	840	1,050	.....	.....	.....
Palestine and Syria	.....	65	.....	.....	.....	.....	1,080	893	.....	.....	.....	706	.....
Persia	.....	.....	.....	.....	.....	.....	.....	.....	35	30	.....	.....	.....
Philippine Islands	2,915	3,119	1,574	.....	.....	.....	648	487	12,532	11,533	8,778	2,997	942
Russia in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, ASIA	$16,261	$11,906	$9,080	$13,245	1,068	$3,041	10,820	$9,251	16,910	$15,962	$9,224	$10,320	$1,076

United States by Countries During August, 1924

Pneumatic Casings			Solid Tires		Pneumatic Tubes			Tire Repair Materials Value	Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
Automobile		Others Value	Automobile and Motor Truck Value	Others Value	Automobile		Others Value		Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value				
Number	Value				Number	Value									
									$63						
					299	$653		$119				$42	$621	$14	$177
686	$9,639				70	103									
40	391							60							
					897	2,244	$139	1,659			$37	750	454		
2,390	28,554	$630	$3,405		700	1,410		290							419
622	11,197		954		37	91		2,861		$243		848	2,899	344	434
247	4,440	1,625			541	1,048		108							
614	9,007		229		589	1,032		210							
557	7,809		8,530	$183	69	118									
30	377				83	158							10		618
42	638				666	861	112	860							
1,669	20,650	1,067			29	41									
10	57				40	57									6,307
23	208				1,138	2,403	80	842	11		35		285		39
2,461	32,177	1,441	1,294		1,746	2,785	190	531					26		
1,727	23,996	644	1,451		392	800									
196	2,777			50	86	26	29		37							
49	598														
20	194				113	215							187		
103	1,667				914	1,901	87	280		25			2,526	22	119
542	10,500	414	2,412		7,090	14,563	557	812	366	25			224		42
7,531	116,047	3,006	5,796		198	928	31				11	347			
271	8,127	314						84							
					40	64					14,526	30,872	27,343	755	29,267
40	407				9,904	15,933	139	7,621					147		3,202
16,044	186,782	2,385	53,749		65	100		2							
108	1,621		2,333		439	505									
259	2,477				100	126									
30	276														
36,311	$480,613	$11,526	$80,203	$269	261,185	$48,168	$1,335	$16,376	$440	$293	$14,609	$32,859	$34,722	$1,133	$40,624
1,841	$35,993	$814	$10,294	$249	1,771	$4,746	$485	$9,827	$820	$1,253	$13,067	$866	$10,370	$274	$12,251
22	230				15	39		15		1		266	111		305
107	1,687				180	431		24					223		44
125	1,877	120			109	203					24		123		36
100	2,455	10	2,143		91	299						2	103		91
10	82				53	119					387	47	34	11	676
1,279	14,648	282	283		465	1,129		140					561	425	47
178	3,692				374	885						737	228		2,336
4,733	62,452	2,033	4,278	1,072	6,753	12,891	148	4,085		1,049	2,745		2,882	49	
2	22														
107	1,414			54	234	344		54			36		308		
				80							11		12		
															16
147	1,807		1,803	133	317	622		198	70				50	13	408
148	1,904				122	174		20							40
142	1,132	418	49	41	129	303		113							240
11,850	115,836	2,628	35,001	879	25,142	41,863	599	3,662	21	793	468	1,433	5,049	2	5,888
1,376	14,014		986	78	1,797	3,394		266					945	14	106
156	1,722		579		279	502		49							
88	1,769				95	264							7	99	15	22
135	2,107	72		308	264	447	16	204							
24	362	45					12								
22,561	$265,205	$6,422	$55,416	$2,894	38,190	$68,655	$1,260	$18,657	$911	$3,096	$16,738	$3,358	$21,098	$803	$22,496
10,940	$130,925	$285	$7,772	$3,002	3,083	$5,261	$104	$7,162			$642	$305	$6,171	$6,760	$1,324
12	173				8	19						14			145
404	5,251		551		116	282		716			288	525	302	536	
927	15,048		416	518	576	1,506		279	$10	$75	22	121	771	34	581
997	14,278	5	468	633	1,313	3,488	68	203			118	134	1,029	22	83
100	1,206		47		140	255		85			77				
			152					34							68
32	214				24	29		34							
			417												
													366	18	549
1,623	27,131		1,293		1,510	3,431	362	305							
3,199	41,312		394		1,084	2,066		1,731			122	374	361	885	
1,814	23,781			852	2,409	5,468		403			19	392	728		108
20,048	$259,319	$290	$11,510	$5,005	10,263	$21,805	$534	$10,852	$10	$75	$1,288	$1,865	$9,728	$8,255	$2,858
					10	$18									
60	$565				1,117	2,687		$186			$44	$188	$431	$29	$4,850
1,089	17,991		$1,746	$560	329	671									114
529	6,904		558		674	1,464	118	13							138
1,015	13,666		958		175	286		28	$385		75	2,059	1,527		643
83	1,279		193	470			13	445							
					5,094	8,331		103							1,132
4,749	44,902	$325	6,016	1,138	2	10									
146	1,522		1,955		66	297						650			
55	1,283										89		743		
					43	62		93	68		1,498	496	7,411		210
20	285		3,336		2,745	3,506									
3,622	49,544		267					150				15	82		38
					10	26									
247	3,153										75	75	861		228
					5,936	10,718	549	1,395				10			
4,656	55,291	1,920	8,279	7,898											
20	174														
16,291	$176,559	$2,245	$23,308	$10,066	16,201	$28,076	$680	$2,413	$453		$1,781	$3,493	$11,055	$29	$7,353

Exports of India Rubber Manufactures from the

	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth Value	Waterproofed Clothing Value
OCEANIA													
Australia	$7,600	$12,850	$3,370	$205	48	$181	120	$120	3,105	$3,088	.....	$17,365	.....
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	150	144	.....	.....	.....
French Oceania	.....	.....	.....	.....	.....	.....	.....	.....	474	497	.....	.....	$116
New Zealand	3,840	3,243	1,448	.....	450	1,461	120	118	144	244	$535	695	.....
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	84	97	.....	.....	.....
TOTALS, OCEANIA	$11,440	$16,093	$4,818	$205	498	$1,642	240	$238	3,957	$4,070	$535	$18,060	$116
AFRICA													
British West Africa	.....	$533	.....	.....	.....	.....	.....	.....	2,888	$2,848	.....	.....	.....
British South Africa	$7,345	11,617	$1,463	$108	1,657	$4,263	.....	.....	.....	.....	$1,013	$280	$1,886
British East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	118	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	271	.....	.....
Egypt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36	438	.....
Portuguese East Africa	4,398	.....	.....	.....	.....	.....	.....	.....	96	163	.....	.....	.....
TOTALS, AFRICA	$11,743	$12,150	$1,463	$108	1,657	$4,263	.....	.....	2,984	$3,011	$1,320	$836	$1,886
GRAND TOTALS	$162,954	$135,099	$81,269	$116,195	89,634	$188,375	350,549	$323,924	291,514	$203,380	$75,985	$104,266	$33,748

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	July, 1924 Pounds	July, 1924 Value	Four Months Ended July, 1924 April-July Pounds	Four Months Ended July, 1924 April-July Value
UNMANUFACTURED				
Rubber, gutta percha, etc.,				
From United Kingdom	.....	.....	2,935,354	$778,128
United States	1,427,028	$295,787	7,357,385	1,641,283
Belgium	.....	.....	50,122	11,393
Ceylon	.....	.....	.....	.....
Straits Settlements	233,794	49,628	782,522	163,531
Dutch East Indies	.....	.....	67,249	16,018
France	.....	.....	.....	.....
Netherlands	.....	.....	.....	.....
Other countries	.....	.....	.....	.....
Totals	1,660,822	$345,415	11,192,632	$2,610,353
Rubber recovered	235,277	18,899	861,634	74,615
Rubber powdered and rubber or gutta percha scrap	514,949	17,835	1,887,471	66,602
Balata	655	552	1,379	1,128
Rubber substitutes	2,988	1,163	201,183	57,288
Totals	2,414,691	$383,867	14,144,299	$2,809,986
PARTLY MANUFACTURED				
Hard rubber sheets and rods	28,884	$8,492	67,821	$31,030
Hard rubber tubes	.....	892	.....	2,968
Rubber thread, not covered	7,973	8,238	22,886	24,082
Totals	36,857	$17,622	90,707	$58,080
MANUFACTURED				
Belting	.....	$9,148	.....	$47,961
Hose	.....	13,631	.....	41,230
Packing	.....	3,164	.....	16,029
Boots and shoes, *pairs*	9,283	7,604	41,780	44,882
Clothing, including waterproofed	.....	13,326	.....	68,904
Gloves	.....	1,643	.....	6,091
Hot water bottles	.....	203	.....	2,136
Tires, solid, *number*	596	5,823	3,596	32,667
Tires, pneumatic, *number*	5,462	56,600	25,194	285,385
Inner tubes, *number*	2,738	5,602	14,925	36,483
Elastic, round or flat	.....	26,467	.....	83,701
Mats and matting	.....	1,234	.....	8,005
Cement	.....	2,643	.....	11,792
Other rubber manufactures	.....	123,920	.....	576,631
Totals	.....	$271,008	.....	$1,261,897
Total rubber imports	.....	$672,494	.....	$4,129,963

Exports of Domestic and Foreign Rubber Goods

	July, 1924 Produce of Canada Value	July, 1924 Re-exports of foreign Goods Value	Four Months Ended July, 1924 April-July Produce of Canada Value	Four Months Ended July, 1924 April-July Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$2,692	.....	$22,474	.....
Total	$2,692	.....	$22,474	.....
MANUFACTURED				
Belting	$67,587	.....	$156,250	.....
Canvas shoes with rubber soles	176,001	.....	516,479	.....
Boots and shoes	36,311	.....	146,368	.....
Clothing, including waterproofed	2,838	.....	13,007	.....
Hose	11,640	.....	39,151	.....
Tires, casings	549,511	.....	1,814,152	.....
Inner tubes	79,832	.....	301,815	.....
Pneumatic	.....	.....	.....	.....
Solid	19,330	.....	68,123	.....
Vehicle	.....	.....	.....	.....
Other rubber manufactures	26,096	$20,079	99,352	$51,317
Totals	.....	$20,079	$3,154,697	$51,317
Total rubber exports	$971,838	$20,079	$3,177,171	$51,317

ECUADOR'S RUBBER INDUSTRY

Imports into Ecuador in 1923 of rubber manufactured goods totaled 56,555 kilos, value 244,465 sucres. Approximately, 5 sucres equal one dollar. Exports for that year of crude rubber were estimated at 588,216 kilos, value 683,228 sucres. The development of the industry is shown more in detail by the declared exports of crude rubber from three of the consular districts, as follows: Guayaquil (1922) 9,957 pounds, value $390; (1923) 19,762 pounds, value, $3,368; Esmeraidas (1922) 6,376 pounds, value $708; (1923) 48,953 pounds, value $7,978; Bahia de Caraquez (1922) 291,646 pounds, value $38,481; (1923) 762,739 pounds, value $104,788.

United States Crude and Waste Rubber Imports for 1924 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1924	Total 1923	Balata	Miscellaneous	Waste
January, *tons*	20,611	731	181	88	.....	.....	21,611	31,197	23	249	95
February	29,977	1,501	192	93	.....	.....	31,763	24,220	47	799	53
March	16,009	980	663	33	67	.....	17,752	33,916	86	98	184
April	41,438	686	139	9	164	.....	42,436	31,588	55	1,371	114
May	22,466	1,176	70	17	185	.....	23,914	36,184½	55	139	104
June	17,610	737	46	115	132	.....	18,840	32,934	15	796	10
July	16,890	1,199	170	43	167	.....	18,469	18,609	26	1,335	50
August	18,397	1,014	567	6	92	.....	20,076	18,674	17	248	...
September	28,362	123	263	85	167	.....	29,000	11,611	15	557	74
Totals, 9 months, 1924, *tons*	211,960	8,147	2,291	489	974	.....	223,861	.....	339	5,592	684
Totals, 9 months, 1923	225,379	9,363	2,920	387	816	68½	.....	238,933½	622	5,770	3,428

Compiled from Rubber Association statistics.

United States by Countries During August, 1924 *(Continued)*

Pneumatic Casings			Solid Tires		Pneumatic Tubes				Hard Rubber Goods			Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
Automobile			Automobile and Motor Truck		Automobile										
Number	Value	Others Value	Value	Others Value	Number	Value	Others Value	Tire Repair Materials Value	Battery Jars and Accessories Value	Other Electrical Supplies Value	Others Value				
5,970	$77,647	.....	$27,883	.....	3,069	$6,377	.....	$3,382	$612	.....	$836	$458	$2,622	$2,007	$4,949
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	237	.....	.....	$576	.....	.....	.....	22	47	.....	.....	.....	.....	.....	.....
5,635	80,209	$274	12,640	.....	4,801	9,618	.....	2,747	40	657	.....	403	1,143	2,202	2,421
24	273	.....	150	.....	46	89	.....	38	.....	.....	.....	.....	.....	.....	.....
11,655	$158,366	$274	$40,673	$576	7,916	$16,084	.....	$6,189	$699	$4,121	$836	$861	$3,765	$4,209	$7,370
129	$3,325	.....	.....	.....	59	$146	.....	$43	.....	.....	.....	.....	.....	.....	.....
2,032	26,986	.....	$484	.....	1,867	3,366	.....	1,980	.....	.....	$1	$34	$1,682	$1,231	$2,978
180	2,424	.....	.....	.....	390	626	.....	.....	.....	.....	.....	.....	.....	.....	.....
261	3,060	$737	2,729	.....	168	292	.....	277	.....	.....	.....	.....	.....	.....	84
116	1,353	.....	820	.....	542	647	.....	.....	.....	.....	.....	110	144	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2,718	$27,148	$737	$4,033	.....	3,026	$5,077	.....	$2,300	.....	.....	$1	$144	$1,862	$1,231	$3,062
109,584	$1,377,210	$21,494	$215,143	$18,810	101,781	$187,865	$3,809	$56,787	$2,513	$4,121	$35,253	$42,580	$82,194	$15,662	$83,763

United Kingdom Rubber Statistics

Imports

UNMANUFACTURED	August, 1924		Eight Months Ended August, 1924	
Crude rubber From—	Pounds	Value	Pounds	Value
Straits Settlements	5,240,100	£268,427	39,323,900	£2,189,258
Federated Malay States	1,796,200	87,727	17,566,700	992,843
British India	657,700	34,787	6,440,500	363,348
Ceylon and Dependencies	2,125,400	107,300	13,371,300	754,817
Other Dutch Possessions in Indian Seas	282,500	17,024	1,912,200	108,963
Dutch East Indies (except other Dutch Possessions in Indian Seas)	1,817,100	93,609	10,450,000	583,350
Other countries in East Indies and Pacific, not elsewhere specified	47,100	2,788	491,600	26,829
Brazil	159,300	5,990	4,069,600	193,161
Peru	.....	.....	36,400	1,845
South and Central America (except Brazil and Peru)	121,600	6,060	157,800	7,807
West Africa:				
French West Africa	2,800	105	962,800	41,545
Gold Coast	8,400	421	129,800	5,825
Other parts of West Africa	65,900	2,715	486,000	20,296
East Africa, including Madagascar	41,100	2,023	531,400	25,918
Other countries	13,700	634	464,900	25,773
Totals	12,378,900	£629,610	96,394,900	£5,341,578
Waste and reclaimed rubber	230,100	2,227	2,985,800	33,741
Gutta percha and balata	282,500	43,340	5,859,100	781,803
Rubber substitutes	22,400	750	22,400	750
Totals	12,913,900	£675,927	105,262,200	£6,157,872
MANUFACTURED				
Boots and shoes....*doz. pairs*	19,262	£43,944	150,084	£299,860
Tires and tubes				
Pneumatic				
Outer covers	.....	184,333	.....	1,384,747
Inner tubes	.....	35,132	.....	286,045
Solid tires	.....	30,365	.....	212,022
Other rubber manufactures	.....	114,230	.....	843,362
Totals	.....	£408,004	.....	£3,026,036

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	918,800	£7,982	6,280,800	£60,280
Rubber substitutes	92,600	2,022	818,300	17,966
Totals	1,011,400	£10,004	7,099,100	£78,246
MANUFACTURED				
Boots and shoes....*doz. pairs*	19,982	£32,721	172,069	£265,864
Tires and tubes				
Pneumatic				
Outer covers	.....	191,134	.....	1,308,027
Inner tubes	.....	30,868	.....	259,722
Solid tires	.....	30,284	.....	233,805
Other rubber manufactures	.....	235,180	.....	1,953,950
Totals	.....	£520,187	.....	£4,021,368

Exports—Colonial and Foreign

UNMANUFACTURED	August, 1924		Eight Months Ended August, 1924	
Crude rubber To—	Pounds	Value	Pounds	Value
Russia	.....	.....	895,300	£50,361
Sweden, Norway, and Denmark	104,200	£6,124	1,959,600	107,886
Germany	1,534,800	77,860	11,277,600	637,469
Belgium	361,900	19,125	2,881,600	159,915
France	975,900	50,686	24,390,600	1,280,240
Spain	47,400	2,302	612,500	32,674
Italy	394,800	20,192	6,706,300	345,748
Austria	17,000	777	244,400	13,062
Hungary	.....	.....	45,600	2,477
Other European countries	162,900	9,014	1,772,700	99,253
United States	5,438,000	305,148	42,817,300	2,400,753
Canada	394,900	18,400	4,505,000	268,994
Other countries	82,900	5,076	640,200	35,090
Totals	9,514,700	£514,704	98,748,700	£5,433,922
Waste and reclaimed rubber	4,200	160	44,800	886
Gutta percha and balata	86,700	5,420	521,600	50,549
Rubber substitutes	.....	.....	1,500	33
Totals	9,605,600	£520,284	99,316,600	£5,485,390
MANUFACTURED				
Boots and shoes....*doz. pairs*	156	£485	2,858	£5,432
Tires and tubes				
Pneumatic				
Outer covers	.....	29,311	.....	311,813
Inner tubes	.....	4,508	.....	25,074
Solid tires	.....	2,213	.....	17,475
Other rubber manufactures	.....	6,126	.....	42,250
Totals	.....	£42,643	.....	£402,044

Landings Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During August

	Landed for August	Delivered for August	Stocks, August 31		
			1924	1923	1922
LONDON:	Tons	Tons	Tons	Tons	Tons
Plantation	4,462	6,780	49,511	48,068	71,988
Other grades	....	3	109	77	124
LIVERPOOL:					
Plantation	†296	†326	†4,006	†5,523	†7,542
Pará and Peruvian	98	211	384	75	185
Other grades	....	2	208	218	420
Total tons, London and Liverpool	4,856	7,322	54,218	53,961	80,259

† Official returns from six recognized public warehouses.

IMPORTS INTO THE DOMINICAN REPUBLIC OF RUBBER AND MANUFACTURES of rubber reached a total value in 1913 of $31,032, the total for 1921 being $211,757; 1922, $193,078; and 1923, $192,394.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
SEPTEMBER 29. By "Bruyere," Pará.					
H. A. Astlett & Co.	266	....	110	90	....
H. A. Astlett & Co.	....	....	....	‡145	....
General Rubber Co.	....	....	....	....	40
Meyer & Brown, Inc.	*595	....	85	130	....
Poel & Kelly, Inc.	64	....	....	25	114
SEPTEMBER 29. By "Pan America," Bolivia.					
Paul Bertuch & Co.	**94	....	....	....	....
OCTOBER 2. By "Pancras," Brazil.					
H. A. Astlett & Co.	204	4	33	9	....
Paul Bertuch & Co.	67	....	63	....	....
General Rubber Co.	723	53	177	[1]542	....
L. Littlejohn & Co., Inc.	2,639	115	142	1,899	....
Meyer & Brown, Inc.	231	....	....	....	....
Poel & Kelly, Inc.	775	2	90	715	....
Ultramares Corp.	....	....	....	127	....
OCTOBER 14. By "Bonheur," Brazil.					
H. A. Astlett & Co.	179	1	65	172	....
H. A. Astlett & Co.	‡100	....	....	....	....
General Rubber Co.	....	....	....	....	125
L. Littlejohn & Co., Inc.	460	....	....	782	....
Meyer & Brown, Inc.	12	....	....	....	....
Poel & Kelly, Inc.	10	1	181	98	....

[1]Includes 9 cases of mixed grades.
‡Washed and dried in Brazil. *Packages. **Bags.

Plantations

SEPTEMBER 18. By "Cyclops," Far East.
H. A. Astlett & Co. 422 cases
H. A. Astlett & Co. *56 cases
General Rubber Co. 43 cases
Hood Rubber Co. *568 cases
J. T. Johnstone & Co., Inc. 206 cases
L. Littlejohn & Co., Inc. 8,494 cases
Meyer & Brown, Inc. 2,278 cases
Vernon Metal & Produce Co., Inc. 410 cases
Chas. T. Wilson Co., Inc. 841 cases

SEPTEMBER 20. By "Volendam," Europe.
J. T. Johnstone & Co., Inc. 671 cases
L. Littlejohn & Co., Inc. 208 cases
Poel & Kelly, Inc. 112 cases
Chas. T. Wilson Co., Inc. 74 cases

SEPTEMBER 22. By "Malakand," Far East.
General Rubber Co. 560 cases
L. Littlejohn & Co., Inc. 364 cases
Poel & Kelly, Inc. 852 cases

SEPTEMBER 23. By "American Trader," Europe.
L. Littlejohn & Co., Inc. 549 cases
Fred Stern & Co., Inc. 789 cases

SEPTEMBER 23. By "Aurania," London.
Poel & Kelly, Inc. 895 cases
Vernon Metal & Products Co., Inc. 62 cases

SEPTEMBER 25. By "President Garfield," Far East.
Baird Rubber & Trading Co., Inc. 1,030 cases
Hood Rubber Co. *623 cases
L. Littlejohn & Co. 1,519 cases
Meyer & Brown, Inc. 200 cases
Mitsui & Co., Ltd. 56 cases
Poel & Kelly, Inc. 750 cases
Vernon Metal & Produce Co., Inc. 125 cases
Chas. T. Wilson Co., Inc. 155 cases

SEPTEMBER 25. By "Spain Maru," Hamburg.
Meyer & Brown, Inc. 141 cases

SEPTEMBER 26. By "Bengal Maru," Far East.
L. Littlejohn & Co., Inc. 112 cases

SEPTEMBER 27. By "Homestead," Far East.
L. Littlejohn & Co., Inc. 112 cases

SEPTEMBER 27. By "Veendam," Europe.
J. T. Johnstone & Co., Inc. 143 cases
L. Littlejohn & Co., Inc. 680 cases
Poel & Kelly, Inc. 897 cases
Chas. T. Wilson Co., Inc. 360 cases

SEPTEMBER 28. By "Virgilia," London.
Paul Bertuch & Co. 100 cases
J. T. Johnstone & Co., Inc. 504 cases
L. Littlejohn & Co., Inc. 2,633 cases
Meyer & Brown, Inc. 881 cases
Poel & Kelly, Inc. 15,067 cases
Vernon Metal & Produce Co., Inc. 607 cases

SEPTEMBER 29. By "Eastern Prince," Far East.
H. A. Astlett & Co. 3,392 cases
H. A. Astlett & Co. *418 cases
Baird Rubber & Trading Co., Inc. 3,141 cases
General Rubber Co. 743 cases
Hood Rubber Co. 2,203 cases
Hood Rubber Co. *134 cases
J. T. Johnstone & Co., Inc. 933 cases
L. Littlejohn & Co., Inc. 12,257 cases
Meyer & Brown, Inc. 1,815 cases
Mitsui & Co., Ltd. 204 cases
H. Muehlstein & Co., Inc. 4,950 cases
Poel & Kelly, Inc. 5,400 cases
Poel & Kelly, Inc. *193 cases
Fred Stern & Co., Inc. 40 cases
Vernon Metal & Produce Co., Inc. 1,562 cases
Chas. T. Wilson Co., Inc. 2,758 cases

SEPTEMBER 29. By "Laconia," Liverpool.
H. A. Astlett & Co. 50 cases

SEPTEMBER 29. By "Minnetonka," London.
H. A. Astlett & Co. 517 cases
Baird Rubber & Trading Co., Inc. 879 cases
L. Littlejohn & Co., Inc. 12,519 cases
Meyer & Brown, Inc. 445 cases
H. Muehlstein & Co., Inc. 328 cases
Poel & Kelly, Inc. 1,200 cases
Fred Stern & Co., Inc. 568 cases

SEPT. 30. By "American Merchant," London.
H. A. Astlett & Co. 161 cases
L. Littlejohn & Co., Inc. 51 cases
Meyer & Brown, Inc. 449 cases

SEPT. 30. By "London Exchange," Europe.
L. Littlejohn & Co., Inc. 2,893 cases

OCTOBER 1. By "City of Calcutta," Far East.
L. Littlejohn & Co., Inc. 1,888 cases
Poel & Kelly, Inc. 1,494 cases
Vernon Metal & Produce Co., Inc. 112 cases

OCTOBER 3. By "Fairfield City," Far East.
H. A. Astlett & Co. 532 cases
General Rubber Co. 4,584 cases
J. T. Johnstone & Co., Inc. 149 cases
L. Littlejohn & Co., Inc. 1,452 cases
H. Muehlstein & Co., Inc. 629 cases
Poel & Kelly, Inc. 549 cases
Fred Stern & Co., Inc. 381 cases
Vernon Metal & Produce Co., Inc. 331 cases
Chas. T. Wilson Co., Inc. 608 cases

OCTOBER 4. By "Colorado," Far East.
H. A. Astlett & Co. 1,061 cases
H. A. Astlett & Co. *620 cases
Baird Rubber & Trading Co., Inc. 1,856 cases
J. T. Johnstone & Co., Inc. 713 cases
L. Littlejohn & Co., Inc. 11,050 cases
Meyer & Brown, Inc. 2,191 cases
H. Muehlstein & Co., Inc. 300 cases
Mitsui & Co., Ltd. 324 cases
Poel & Kelly, Inc. 6,593 cases
Fred Stern & Co., Inc. 469 cases
Vernon Metal & Produce Co., Inc. 100 cases
Chas. T. Wilson Co., Inc. 1,478 cases

OCTOBER 4. By "New Amsterdam," Rotterdam.
L. Littlejohn & Co., Inc. 58 cases
H. Muehlstein & Co., Inc. 239 cases
Chas. T. Wilson Co., Inc. 435 cases

OCTOBER 5. By "Yerfuken Maru," Hamburg.
Vernon Metal & Produce Co., Inc. 70 cases

OCTOBER 6. By "Baltic," London.
Baird Rubber & Trading Co., Inc. 56 cases
L. Littlejohn & Co., Inc. 56 cases
Chas. T. Wilson Co., Inc. 286 cases

OCTOBER 6. By "Franconia," Far East.
Poel & Kelly, Inc. 739 cases

OCTOBER 7. By "American Banker," London.
H. A. Astlett & Co. 80 cases
Baird Rubber & Trading Co., Inc. 1,170 cases
General Rubber Co. 1,595 cases
L. Littlejohn & Co., Inc. 4,847 cases
Chas. T. Wilson Co., Inc. 1,317 cases

OCTOBER 8. By "City of Benares," Far East.
Baird Rubber & Trading Co., Inc. 1,084 cases
General Rubber Co. 500 cases
L. Littlejohn & Co., Inc. 2,265 cases
Meyer & Brown, Inc. 280 cases
H. Muehlstein & Co., Inc. 1,850 cases
Poel & Kelly, Inc. 969 cases
Vernon Metal & Produce Co., Inc. 168 cases

OCTOBER 10. By "Breedyck," Rotterdam.
H. Muehlstein & Co., Inc. *1,112 cases

OCTOBER 10. By "Novian," London.
Hood Rubber Co. *796 cases
Poel & Kelly, Inc. *556 cases
Vernon Metal & Produce Co., Inc. *100 cases

OCTOBER 10. By "President Polk," Far East.
Baird Rubber & Trading Co., Inc. 331 cases
Hood Rubber Co. *197 cases
J. T. Johnstone & Co., Inc. 433 cases
L. Littlejohn & Co., Inc. 3,083 cases
Meyer & Brown, Inc. 100 cases
Mitsui & Co., Ltd. 560 cases
H. Muehlstein & Co., Inc. 190 cases
Poel & Kelly, Inc. 1,001 cases

OCTOBER 10. By "Taketoyo Maru," Japan.
Mitsui & Co., Ltd. 1,000 cases

OCTOBER 11. By "Westerdyk," Europe.
L. Littlejohn & Co., Inc. 84 cases
H. Muehlstein & Co., Inc. 34 cases

OCTOBER 12. By "London Commerce," Europe.
L. Littlejohn & Co., Inc. 2,562 cases
Meyer & Brown, Inc. 5 cases
H. Muehlstein & Co., Inc. 436 cases

OCTOBER 12. By "Titan," Far East.
H. A. Astlett & Co. 831 cases
H. A. Astlett & Co. *140 cases
Baird Rubber & Trading Co., Inc. 1,640 cases
Baird Rubber & Trading Co., Inc. *300 cases
Paul Bertuch & Co. 70 cases
Hood Rubber Co. 141 cases
J. T. Johnstone & Co., Inc. 292 cases
L. Littlejohn & Co., Inc. 8,058 cases
Meyer & Brown, Inc. 1,345 cases
Mitsui & Co., Ltd. 717 cases
Poel & Kelly, Inc. 6,335 cases
Fred Stern & Co., Inc. 473 cases
Vernon Metal & Produce Co., Inc. 140 cases

OCTOBER 12. By "Verentia," London.
H. A. Astlett & Co. 100 cases
Baird Rubber & Trading Co., Inc. 1,181 cases
Paul Bertuch & Co. 294 cases
Paul Bertuch & Co. 1 bag
J. T. Johnstone & Co., Inc. 280 cases
L. Littlejohn & Co., Inc. 2,888 cases
H. Muehlstein & Co., Inc. 800 cases
Poel & Kelly, Inc. 9,498 cases

OCTOBER 13. By "Minnewaska," London.
H. A. Astlett & Co. 843 cases
L. Littlejohn & Co., Inc. 4,035 cases
H. Muehlstein & Co., Inc. 1,120 cases
Poel & Kelly, Inc. 50 cases
Fred Stern & Co., Inc. 212 cases

OCTOBER 14. By "American Farmer," Europe.
L. Littlejohn & Co., Inc. 50 cases
H. Muehlstein & Co., Inc. 500 cases

OCTOBER 14. By "Scythia," Europe.
L. Littlejohn & Co., Inc. 208 cases

OCTOBER 14. By "Tymeric," Far East.
General Rubber Co. 812 cases
L. Littlejohn & Co., Inc. 460 cases
H. Muehlstein & Co., Inc. 112 cases
Poel & Kelly, Inc. 35 cases
Fred Stern & Co., Ins. 212 cases

OCTOBER 16. By "Nile," Far East.
J. T. Johnstone & Co., Inc. 136 cases
L. Littlejohn & Co., Inc. 425 cases
Meyer & Brown, Inc. 250 cases

OCTOBER 17. By "Kambangan," Far East.
General Rubber Co. 2,574 cases
J. T. Johnstone & Co., Inc. 201 cases
Meyer & Brown, Inc. 230 cases
Fred Stern & Co., Inc. 435 cases

OCTOBER 17. By "Simaloer," Far East.
General Rubber Co. 60 cases
J. T. Johnstone & Co., Inc. 252 cases
Meyer & Brown, Inc. 234 cases
Fred Stern & Co., Inc. 199 cases

Africans

SEPTEMBER 30. By "Zarembo," Bordeaux.
Poel & Kelly, Inc. 1,208 bales

OCTOBER 4. By "Ohio," Europe.
L. Littlejohn & Co., Inc. 42 packages

OCTOBER 6. By "Franconia," Europe.
L. Littlejohn & Co., Inc. 225 packages
Poel & Kelly, Inc. 2,050 bales

OCTOBER 10. "Breedyck," Amsterdam.
Hood Rubber Co. 15 cases

OCTOBER 18. By "Titania," Hamburg.
Poel & Kelly, Inc. 1,707 cases

OCTOBER 22. By "Sweden Maru," Hamburg.
Fred Stern & Co., Inc. 413 cases

Balata

SEPTEMBER 29. "Nickerie," French Guiana.
Middleton & Co., Ltd. 8 bales

OCTOBER 2. By "Pancras," Manáos.
H. A. Astlett & Co. 15 cases
Paul Bertuch & Co. 1 bag
Fred Stern & Co., Inc. 30 cases

OCTOBER 14. By "Bonheur," Manáos.
Paul Bertuch & Co. 5 cases

Guayule

SEPTEMBER 15-OCTOBER 13. By railroads from Mexico.
Continental Rubber Co. 3,740 cases

Rubber Latex

OCTOBER 3. By "Fairfield City," Far East.
General Rubber Co. 206,400 lbs.

[1]Arrived at Boston.

British Malaya

Rubber Exports

An official cablegram from Singapore states that the amount of rubber exported from British Malaya during the month of September was 25,127 tons, and the amount imported during the month was 9,291 tons. In this latter figure no deduction has been made for moisture in the native rubber from the Netherlands East Indies. The following are comparative statistics:

	1923		1924	
	Gross Exports, Tons	Foreign Imports, Tons	Gross Exports, Tons	Foreign Imports, Tons
January	22,871	4,358	23,844	8,867
February	19,907	4,089	19,395	7,440
March	23,646	5,108	22,294	8,269
April	24,008	5,389	20,551	7,909
May	20,115	5,020	19,674	7,259
June	18,621	4,937	18,084	7,435
July	16,749	5,624	21,670	9,777
August	19,806	7,042	22,133	9,776
September	21,955	5,269	25,127	9,291

Distribution

Destination	August, 1924, Tons	September, 1924, Tons
United Kingdom	3,133.00	*2,506
United States of America	16,379.51	*20,205
Continent of Europe	892.55	*1,197
British possessions	780.72	*173
Japan	944.56	*1,037
Other foreign countries	3.13	*9
Totals	22,133.47	*25,127

*To the nearest ton.

Stocks of Rubber

A telegram from Singapore to the Malay States Information Agency states that dealers' stocks of rubber on September 30, 1924, were in Singapore 16,648 tons and in Penang 3,211 tons.

Imports of Crude Rubber Into the United States by Customs Districts

	June, 1923		June, 1924	
	Pounds	Value	Pounds	Value
Vermont	.....	.....	2,850	$587
Massachusetts	2,321,196	$722,325	509,966	115,322
New York	71,140,957	21,232,509	47,057,916	10,584,163
Philadelphia	929,100	422,807	.....	.....
Maryland	784,075	273,072	44,800	10,765
Los Angeles	2,715,452	878,978	379,671	78,431
San Francisco	543,489	177,568	1,711,562	368,293
Oregon	11,270	3,887	100,800	24,144
Washington	44,820	14,582	.....	.....
Colorado	698,352	216,209	324,558	72,542
Totals	79,188,711	$23,941,937	50,132,123	$11,254,247

	July, 1923		July, 1924	
	Pounds	Value	Pounds	Value
Massachusetts	837,461	$221,095	1,620,221	$340,933
New York	42,136,875	12,313,472	39,784,690	8,369,628
Philadelphia	278	21	.....	.....
Maryland	.....	.....	1,343,720	293,923
Los Angeles	997,120	287,032	596,517	119,666
San Francisco	271,272	76,716	152,815	31,884
Oregon	.....	.....	44,800	11,327
Chicago	.....	.....	23,892	5,646
Colorado	391,792	110,504	56,000	12,450
Totals	44,634,798	$13,008,840	43,622,655	$9,185,457

	August, 1923		August, 1924	
	Pounds	Value	Pounds	Value
Massachusetts	1,702,267	$450,339	1,323,981	$275,328
Buffalo	.....	.....	6,761	1,375
New York	39,246,117	10,665,463	42,048,510	8,411,241
Maryland	447,975	131,086	3,851,271	722,368
Los Angeles	693,710	187,361	31,098	6,426
San Francisco	343,133	93,238	1,470,210	440,736
Colorado	307,728	85,131	38,080	7,811
Totals	42,741,430	$11,612,618	48,769,911	$9,865,285

DURING THE FIRST HALF OF THE PRESENT YEAR THE LEADING customers for American-made rubber belting have been: Mexico, taking during this six months period goods valued at $133,967; British South Africa, $129,799; Canada, $72,401; Japan, $70,270; and Australia, $66,320.

Plantation Rubber Exports from Dutch East Indies

Java and Madura

	June		Six Months Ended June	
To—	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
Holland	214,000	231,000	1,477,000	2,122,000
Great Britain	340,000	672,000	2,485,000	3,582,000
Germany	22,000	37,000	121,000	213,000
France	25,000	28,000	264,000	156,000
Belgium	.....	.....	.....	9,000
Italy	21,000	27,000	147,000	161,000
Canada	.....	.....	16,000	.....
United States	1,909,000	1,530,000	11,893,000	12,290,000
Singapore	261,000	366,000	874,000	1,443,000
Hongkong	.....	.....	.....	27,000
Japan	94,000	63,000	134,000	597,000
Australia	24,000	3,000	106,000	214,000
Totals	2,910,000	2,957,000	17,517,000	20,814,000
Tandjong-Priok	1,174,000	1,135,000	6,991,000	7,665,000
Samarang	251,000	213,000	1,273,000	1,407,000
Sourabaya	1,025,000	1,110,000	6,964,000	8,652,000
Pasuruan	111,000	103,000	529,000	681,000
Probolinggo	139,000	51,000	384,000	589,000
Banjuwangi	32,000	145,000	470,000	456,000
Tjilatjap	30,000	102,000	258,000	637,000

Belawan-Deli

To—				
Holland	61,000	122,000	853,000	905,000
Great Britain	276,000	352,000	926,000	2,049,000
Germany	9,000	77,000	99,000	238,000
France	28,000	44,000	50,000	102,000
Belgium	13,000	.....	42,000	5,000
Italy	54,000	71,000	124,000	131,000
United States	1,629,000	2,129,000	12,985,000	13,614,000
Singapore	273,000	92,000	1,632,000	488,000
Straits Settlements	7,000	.....	152,000	.....
Penang	34,000	72,000	207,000	426,000
Australia	.....	.....	.....	4,000
Other countries	.....	30,000	9,000	113,000
Totals	2,384,000	2,989,000	17,079,000	18,075,000

Java and Madura

	July		Seven Months Ended July	
To—	1923 Kilos	1924 Kilos	1923 Kilos	1924 Kilos
Holland	308,000	221,000	1,785,000	2,343,000
Great Britain	591,000	565,000	3,076,000	4,147,000
Germany	49,000	45,000	170,000	258,000
France	50,000	88,000	314,000	244,000
Belgium	.....	.....	.....	9,000
Italy	35,000	57,000	182,000	218,000
Canada	38,000	.....	54,000	.....
United States	1,168,000	2,246,000	13,061,000	14,536,000
Singapore	119,000	287,000	993,000	1,730,000
Hongkong	.....	.....	.....	27,000
Japan	71,000	90,000	205,000	687,000
Australia	48,000	21,000	154,000	235,000
Other countries	.....	15,000	.....	15,000
Totals	2,477,000	3,635,000	19,994,000	24,449,000
Tandjong-Priok	1,068,000	1,335,000	8,065,000	9,000,000
Samarang	125,000	335,000	1,398,000	1,742,000
Sourabaya	932,000	1,535,000	7,896,000	10,187,000
Pasuruan	108,000	126,000	637,000	867,000
Probolinggo	.....	38,000	384,000	627,000
Banjuwangi	107,000	45,000	577,000	501,000
Tjilatjap	39,000	75,000	297,000	712,000

Belawan-Deli

To—				
Holland	149,000	239,000	1,002,000	1,144,000
Great Britain	479,000	374,000	1,405,000	2,423,000
Germany	11,000	10,000	110,000	248,000
France	15,000	100,000	65,000	202,000
Belgium	45,000	.....	87,000	5,000
Italy	20,000	35,000	144,000	166,000
United States	1,980,000	1,964,000	14,965,000	15,578,000
Singapore	124,000	83,000	1,756,000	571,000
Straits Settlements	.....	.....	152,000	.....
Penang	69,000	109,000	276,000	535,000
Australia	1,000	3,000	1,000	7,000
Other countries	.....	.....	9,000	113,000
Totals	2,893,000	2,917,000	19,972,000	20,992,000

DURING THE TWELVE MONTHS ENDED DECEMBER, 1923, THE United States imported 692,467,527 pounds of crude rubber, value $185,057,719. It is interesting to note that during the first seven months only of the present year the amount has already reached 406,540,963 pounds, value $96,683,724. Crude rubber imports by the United States in 1922 had a total value of $101,843,280, the figure for 1921 being $73,756,694.

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